

AMERICAN ARTISAN

MARCH
1943



RESIDENTIAL AIR CONDITIONING
ARM AIR HEATING • SHEET METAL CONTRACTING

ESTABLISHED
1880

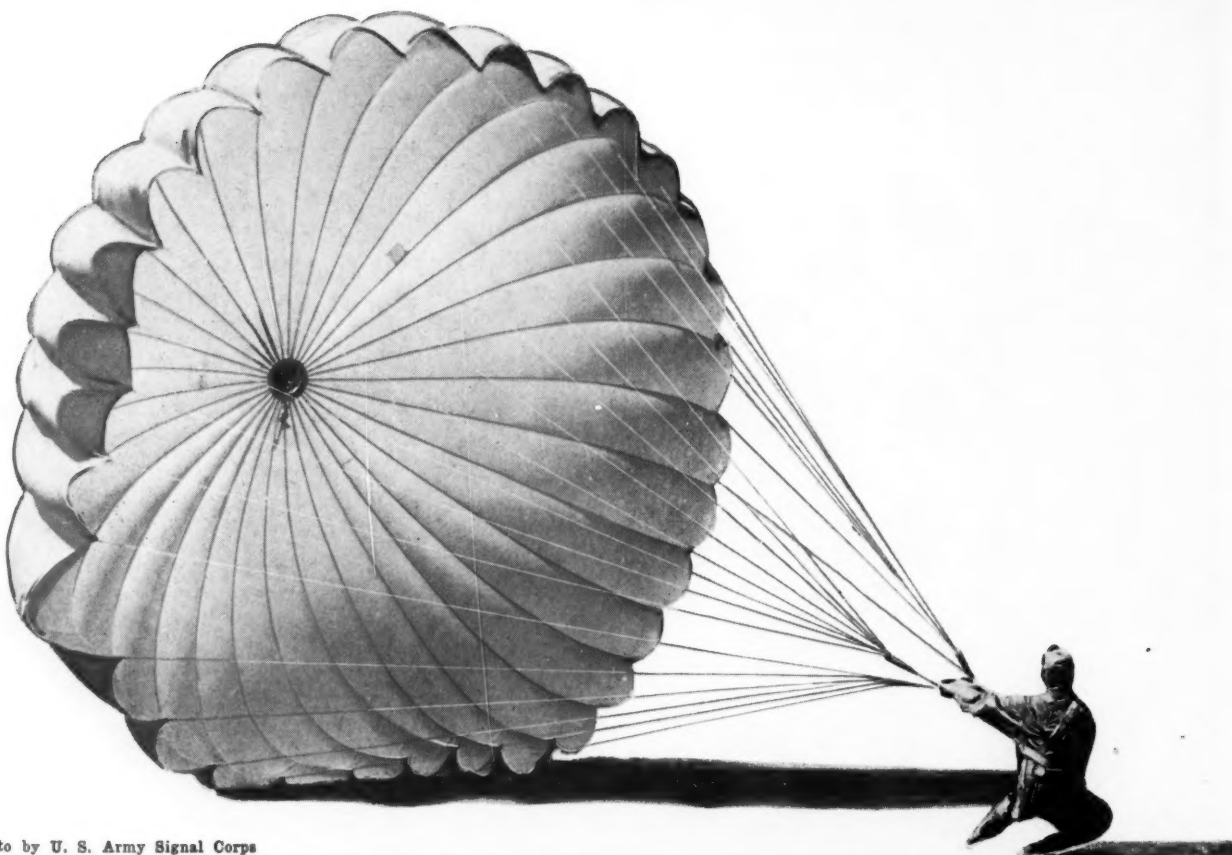


Photo by U. S. Army Signal Corps

Things to depend on . . .

Just a minute . . . and a thousand feet ago, this daring young paratrooper hung suspended by the slender threads of his chute. He had faith in its ability to carry him safely to earth.

Through wars and peace, in good times and bad, Randall Bearings have proved their dependability. They have been used on more air-handling units than any other. Quiet, smooth-turning, efficient Randalls give many years of economical service, are easy to install, require only minimum maintenance.

In this war, Randalls have proved their ready ability to fulfill our grave responsibility . . . have been installed on virtually every type of war-production equipment. Randall Graphite Bronze Bearings are available in many styles and sizes. Randall self-aligning and self-lubricating Pillow Blocks can be adapted to your specifications. Write today for Catalogs 43 and 43GB showing complete Randall line of Pillow Blocks and Graphite Bronze Bearings.

Randall

BEARINGS



Cut-away section of
Randall Graphite
Bronze Bearing



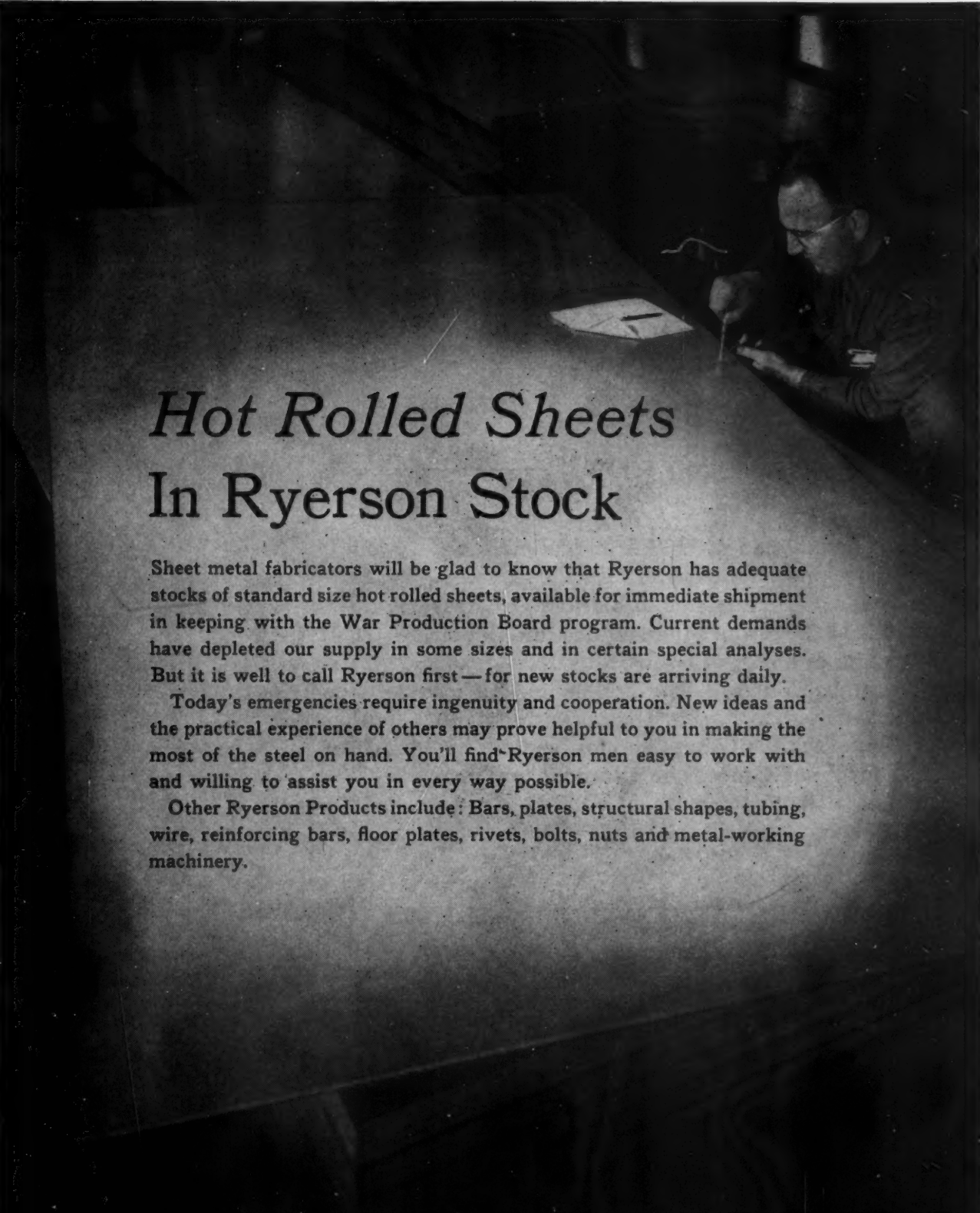
Randall self-lubricating, self-aligning Flange or Side Mount Pillow Block

RANDALL GRAPHITE PRODUCTS CORPORATION

Dept. 311

609 W. Lake St.

Chicago, Ill.



Hot Rolled Sheets In Ryerson Stock

Sheet metal fabricators will be glad to know that Ryerson has adequate stocks of standard size hot rolled sheets, available for immediate shipment in keeping with the War Production Board program. Current demands have depleted our supply in some sizes and in certain special analyses. But it is well to call Ryerson first—for new stocks are arriving daily.

Today's emergencies require ingenuity and cooperation. New ideas and the practical experience of others may prove helpful to you in making the most of the steel on hand. You'll find Ryerson men easy to work with and willing to assist you in every way possible.

Other Ryerson Products include: Bars, plates, structural shapes, tubing, wire, reinforcing bars, floor plates, rivets, bolts, nuts and metal-working machinery.

RYERSON STEEL-SERVICE

JOSEPH T. RYERSON & SON, INC., PLANTS LOCATED AT:
CHICAGO, MILWAUKEE, ST. LOUIS, CINCINNATI, DETROIT,
CLEVELAND, BUFFALO, BOSTON, PHILADELPHIA, JERSEY CITY

AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

FURNACES
SHEET METALS

AND

Warm-Air
Heating

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

Vol. 112, No. 3

March, 1943

Founded 1880

CONTENTS

Better Get Acquainted with OPA and WMC.....	21
Suggested Forms for Use with MPR-251.....	22
Interpretations, Amendments to Existing Orders.....	25
How to Get Materials for Maintenance and Repair....	28
L-280 the Fan and Blower Order.....	29
Nat'l Warm Air Heating & Air Conditioning Ass'n Page	33
Kruckman—Situation Facing "Small Business".....	34
WMC's Report on the Labor Situation.....	36
The 48-Hour Week Order (with questions and answers)	37
Association Activities	63
The Wisconsin Convention.....	64
New Products	66

THE RESIDENTIAL AIR CONDITIONING SECTION

Simplified—But Better—Gravity Systems (Part 2).....	41
Davis Bros. Sells Storm Sash to Maintain Volume.....	44
Gravity Furnace in the "Six-Family Apartment".....	46
The New War Housing Manual.....	49

THE SHEET METAL SECTION

An Adjustable Infra-Red Drying Oven.....	53
Fish Hold Construction as Way to Line Vats.....	54
An Incendiary Bomb "Remover".....	56
Costing Method for Your Welding Operations (Part 2).	57
Neubecker—Two Prong Blow Pipe "Y" Junction.....	60

THERE are no brand new orders this month, but we do believe the editorial on page 21 is worthy of some thought because it points out a condition which we suspect may be even more widespread than the editorial indicates.

At this year's conventions it is apparent that some contractors have been paying no attention to MPR-251, which tells you how much you may charge for your materials, your labor and your profit. There are other contractors who have failed to file the reports required by MPR-251.

If you have been lax in complying with MPR-251 we suggest that you read the discussion in the February Artisan (page 20) and in this issue (page 22) and set up an office procedure to meet the new requirements.



There is also some confusion, it seems, on the priority ratings contractors may extend to their suppliers for materials for maintenance and repair. As the situation stands today, industrial firms may extend high ratings (AA-1 and AA-2X) depending on whether the firm is a CMP unit or a PRP unit, and lower ratings if engaged in essential civilian activity. Rural homes and urban homes take A-10 under P-84, but farm buildings may get up to AA-5. This repair and maintenance situation is discussed on page 28.



Another problem, now coming to the fore, concerns labor—who may be deferred; how many hours to work a week; what wage rate to pay; effect of union labor agreements, etc. Two articles in this issue—page 36 and 37—outline the basic conditions. Later issues will discuss manning tables and schedules.

Member of Audit Bureau of Circulations—Member Associated Business Papers, Inc.

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SAL-MO SUPPLY DUCT

Sal-Mo Supply Duct, the conduit material for installing both supply and return ducts in Warm Air Heating, Ventilating and Air Conditioning systems.

SAVES METAL—With Sal-Mo Supply Duct a saving in metal of approximately 90% is usual in the average Warm Air system. This permits many installations that would be impossible if metal was used.

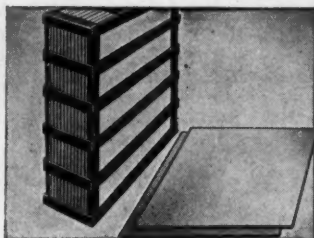
SAFE, DURABLE, EFFICIENT—Proved by leading laboratories to have a wide margin of safety and durability, Sal-Mo Supply Duct is APPROVED AND LISTED BY UNDERWRITERS' LABORATORIES, INC.

CONVENIENT—Folded and packaged in cartons at the factory, Sal-Mo Supply Duct is easy to handle and erect, easy to ship and store. It saves time.

AVAILABLE PROMPTLY — Furnished in a complete range of sizes for domestic and industrial requirements and also in flat sheets.

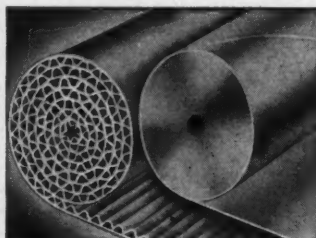
SAL-MO *Asbestos* PRODUCTS

SAL-MO Asbestos Products for Fireproofing, Insulation and Air Conditioning include: Asbestos Insulation Papers in various weights; Corrugated Aircell and Multicell Paper and Asbestos Millboard; Asbestos Pipe Coverings of all types for high and low pressure lines; Asbestos Furnace and Boiler Cements; Range Boiler and Tank Jackets for Hot Water Heaters; Asbestos Ductboard; Asbestos Insulation for supply lines and cold air returns.



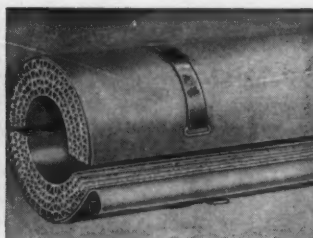
ASBESTOS MILLBOARD

For fireproofing and insulating. Furnished in various sizes and thicknesses.



AIR CELL PAPER AND SHEETS

Fireproof insulation for conserving heat. ASBESTOS PAPER AND ROLLBOARD Made into smooth, strong white rolls from selected asbestos fibre.



ASBESTOS PIPE COVERING

Uniform, durable, efficient covering for steam and hot water pipes. All standard pipe sizes and thicknesses.



SAL-MO ASBESTOS DUCTBOARD

Developed for constructing cold air return ducts in warm air heating systems. Light in weight, fireproof and moisture proof. Easily applied.

SALL MOUNTAIN COMPANY

176 W. Adams St., CHICAGO

NEW YORK, N. Y.

HAMILTON, O.

FUEL RATIONING BRINGS OUT THE BEST IN PENN TEMTROL



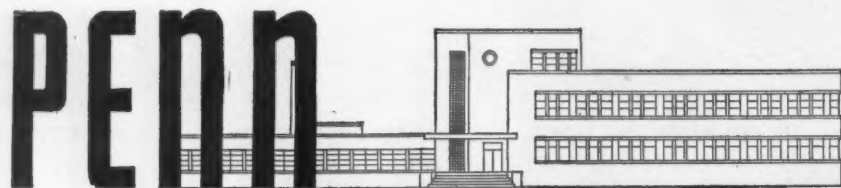
YOUR customers whose heating plants are controlled by Penn Temtrol, are getting an extra value under the fuel restrictions of war-time living.

Temtrol holds temperature closely to the selected level, avoiding wide swings in the intervals between "on" and "off" operating periods. Zig-zag heating is uncomfortable under the best conditions—it is doubly so when the thermostat setting is below the accustomed standard. Our bodies soon condition themselves to lower temperature if steadily maintained, but alternate periods of chilling prevent such adjustment and cause added discomfort.

Accurate temperature control maintained by Temtrol in the "4-foot zone"—the lived-

in portion of the home—helps conserve fuel, too; makes the allotted ration go further in affording comfortable, healthful warmth.

During the war, Penn Temtrol is keeping users "sold" on their automatic heating. After Victory, heating dealers and contractors will again find added sales opportunities with Penn automatic controls, which will then be available without restriction. *Penn Electric Switch Co., Goshen, Indiana.*



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

The
is bu
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WHAT CONTINENTAL STEEL IS DOING BETTER FOR WAR TODAY ★ IT WILL DO BETTER FOR YOU TOMORROW ★ ★ ★

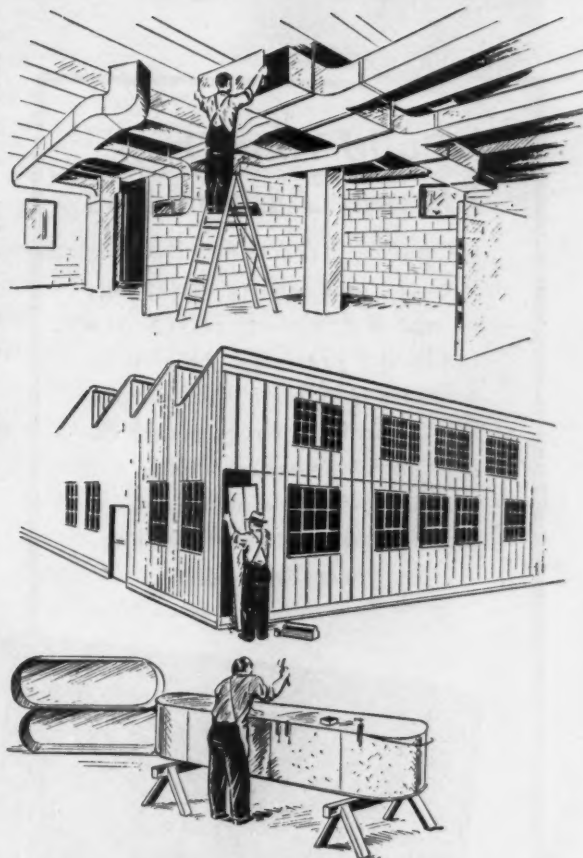
The production of steel sheets to meet the varied demands of war is building a reserve of specialized metallurgical experience and production facilities at Continental. These resources will be at your call when war ends. Continental will be better equipped than ever to meet your needs in steel sheets, and to work with you on your plans for new products and new production.

Every day you wait for steel your market is getting better. Replacement needs are piling up, and new buildings will be needed after the war. You may be sure that Continental is planning to supply steel sheets to best meet these needs. As you plan for the future, you can rely on Continental-Superior trademarks as your guide to quality steel sheets.

CONTINENTAL STEEL CORPORATION

KOKOMO, INDIANA

(The Superior Sheet Steel Co., Canton, Ohio—a subsidiary)



SUPERIOR

CONTINENTAL STEEL CORPORATION

More Air Per Pound of Steel



with **MORRISON** *Airstream* **BLOWER WHEELS**

**30-40% less steel... fabricated on
automatic equipment... patented construction**

Build Your Own Blower Assemblies

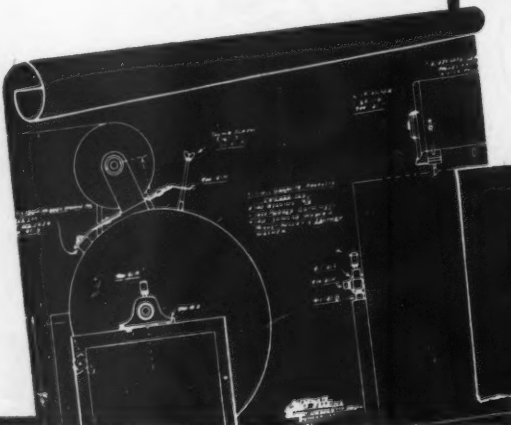
By using *Airstream* Blower Wheels and taking advantage of our engineering service you can build your own blower assemblies at a substantial saving. We'll furnish proper scroll design for your requirements and complete detail working drawing. If desired, one of our engineers will call.

● Due to scientific design, streamlined air inlets and elimination of excess metal, MORRISON *Airstream* Blower Wheels deliver more air per pound of steel.

Our patented hub construction, which eliminates the use of cast iron or screw machine parts, together with our one-piece construction, reduces weight to a minimum.

Yet the wheel is stronger and more rigid, true running and quiet. The one-piece blade group is made from one continuous strip of steel, then spot-welded to the channel-shaped end rings. This eliminates chance of loose blades and reduces vibration to a minimum. This patented construction on modern automatic equipment produces savings in steel and labor which are passed on to you.

**The Modern Morrison Way Conserves
Vital Steel—Aids Victory**

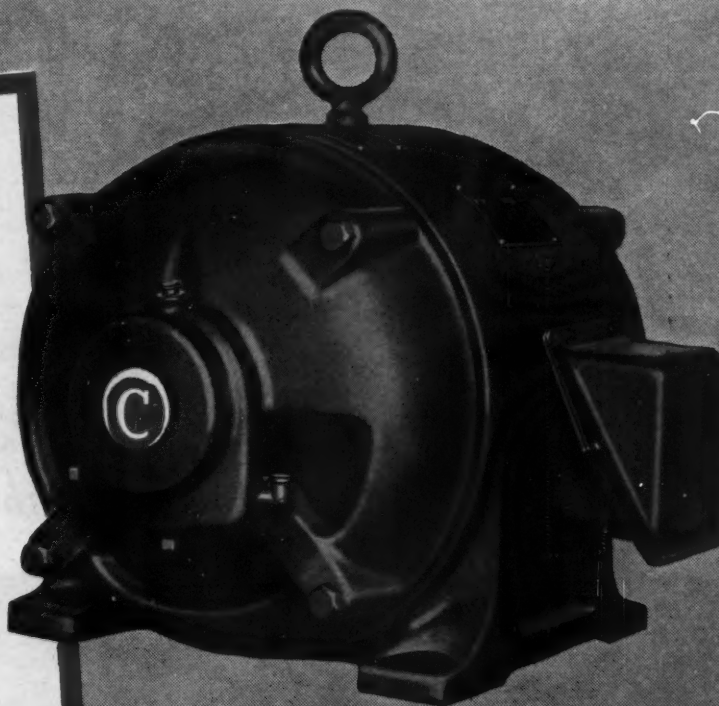


MORRISON PRODUCTS, INC.
EAST 168TH & WATERLOO ROAD
CLEVELAND, OHIO

CENTURY FORM J MOTOR

Protection Against Falling Solids and Dripping Liquids

The top half of the motor is closed. Cooling air enters at both ends and is discharged below the shaft line.



The upper half of the Century Form J general purpose, open, continuous duty motor is closed to minimize the possibility of dripping liquids or falling solids entering the vital parts of the motor.

This added protection feature is made possible because of the scientifically designed Century mechanical ventilation system. All motors generate heat, so if the insulation is to have long life, the heat must be rapidly

carried away from the windings. Two powerful fans located behind each

bearing bracket draw cooling air "IN" through the bearing bracket openings. This cooling air is deflected first around the bearings to keep them cool and then across the windings and to air passages between the outer surfaces of the magnetic core and the frame—the heated air being finally discharged "OUT" through the openings located at the sides and bottom of the frame.

These modern, protected, industrial, general purpose motors meet the requirements of more than 80% of all polyphase motor applications. This Form J construction is at present available in 2 to 15 horsepower four-pole frame sizes.

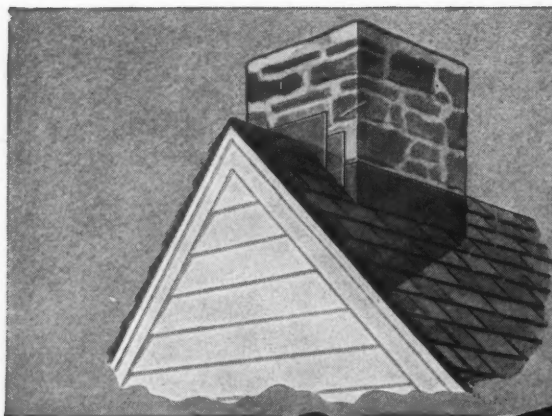
Your Century Motor Specialist has full information and his wide experience may well prove valuable to you. We suggest you call him in today.



CENTURY ELECTRIC CO., 1806 Pine St., St. Louis, Mo.

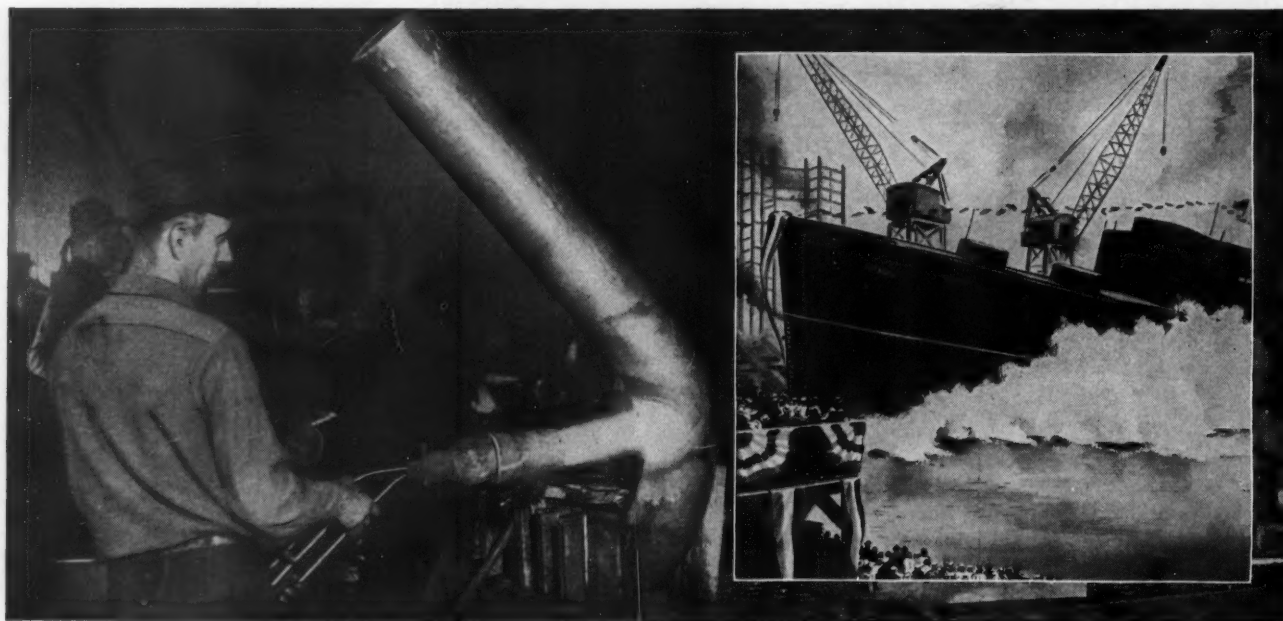
Offices and Stock Points in Principal Cities

One of the Largest EXCLUSIVE Motor and Generator Manufacturers in the World.



THE COPPER THAT YOU
MIGHT HAVE USED FOR
THIS CHIMNEY FLASHING...

Instead-
makes special copper tube
shapes like this for our merchant marine



TODAY, the long-lasting standby metal of your trade... copper... is needed for war production. We know you realize its importance in America's struggle for victory. Huge quantities are required for ammunition, for planes and tanks and ships.

Typical of the wartime applications for which copper is so vitally needed is this



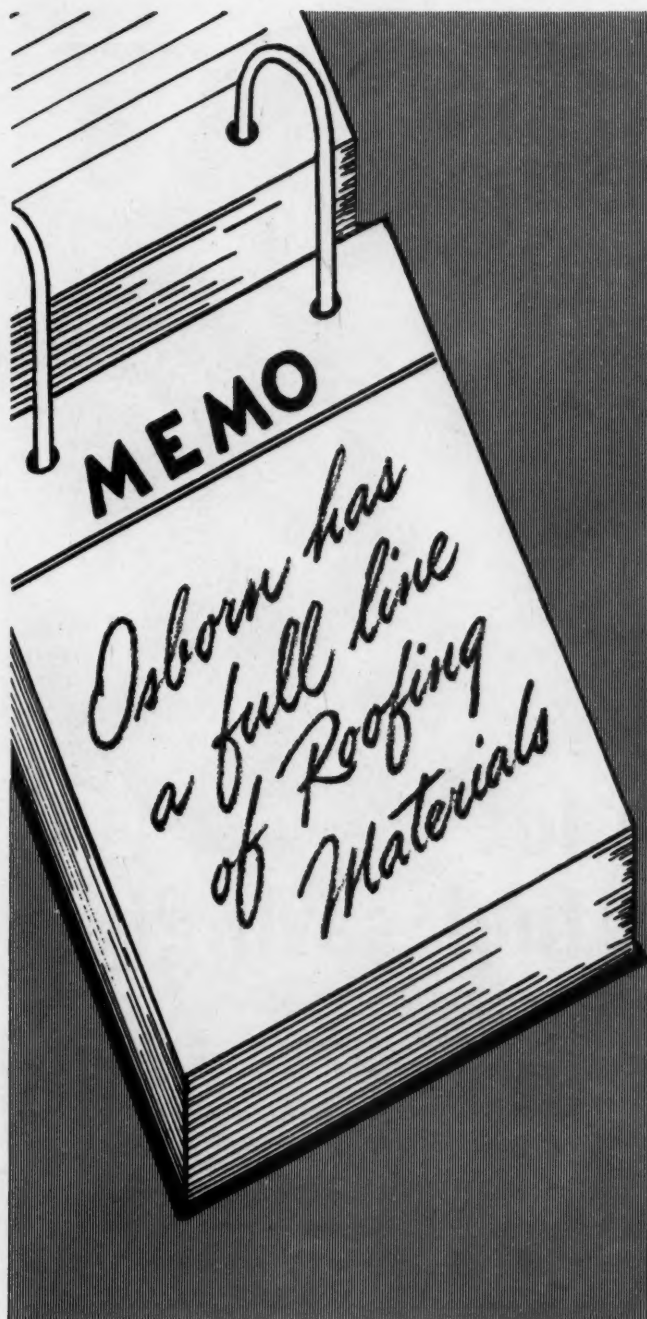
special shaped tube of sheet copper for use on a new merchant vessel. Copper equipment in a hundred different forms is needed in large quantities and with the greatest speed to keep pace with our expanded ship-building program.

The time-honored properties of copper with which the sheet metal trade has so long

been familiar... rust immunity, corrosion resistance, heat conductivity and easy fabrication... these are the reasons why copper is in such great demand by our war essential industries.

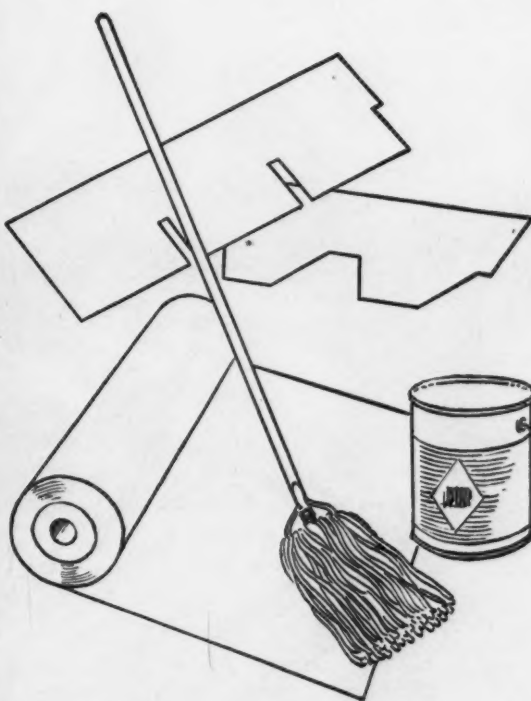
THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.
New Toronto, Ont. 4227

Anaconda Copper



ASPHALT SHINGLES AND ROLL ROOFING
 INSULATED BRICK-TYPE AND ASBESTOS SIDING
 FELTS—PAPER—CEMENTS—NAILS
 ROOFERS' TOOLS—LADDERS AND ACCESSORIES

A DEPENDABLE SOURCE
 OF SUPPLY FOR 84 YEARS



WAR times or peace, the approach of Spring always heralds the beginning of the building season. But, this year, conditions will be different in one respect—maintenance and repair work will play a more important part than ever before.

There are two reasons for this. First, there will not be the usual volume of new home construction because of government restrictions with which we are all familiar. Second, factory and building managers as well as home owners are recognizing the advisability of keeping their properties in the best possible condition as long as materials are available.

Are you ready to handle your share of this Spring's roofing work? If not, we invite you to make use of our services. We have prepared for this busy roofing season by rounding out our stocks of the materials and equipment you will need. Like hundreds of other roofers, you will find it to your advantage to make OSBORN your source of supply.

THE J. M. & L. A.
OSBORN Co
 CLEVELAND, OHIO
 BUFFALO • CINCINNATI • DETROIT
 Distributors of Metals and Metal Products



They're learning a lot about fuel saving!

Adversity is a great teacher. Thousands of dwellers in homes large and small are today finding out things they never knew about heating economy. Some of them are learning the hard way — discovering for the first time that their heating equipment is wasteful of fuel, and that restricted rations mean discomfort. Now they're watching the fuel gage with hawk-like intensity, and praying for an early Spring.

Others, however, have a self-satisfied look when the subject is broached. These are likely to be the people who have Fitzgibbons Steel Boilers or Air Conditioners. They have perhaps shut off a spare room or so, learned to use care in other ways, and without sacrifice of comfort are keeping within their budgeted fuel ration. These people are feeling pretty thankful today, for the excellent judgment of their dealers who recommended "Fitzgibbons."

Among the less fortunate, more and more often you hear the plaint—"Wish I had a Fitzgibbons — I'll never build another house without one!"

BUY U. S. WAR BONDS
and STAMPS



Fitzgibbons Boiler Company, Inc.

101 PARK AVENUE, NEW YORK, N. Y.

WORKS: OSWEGO, N. Y.

Branches and Representatives in Principal Cities

FITZGIBBONS

Steel Boilers and Air Conditioners that make fuel go farther

FAST FIGHTER



TOE-TO-TOE slugging isn't for destroyers. They move in fast, like a lightweight boxer, slam home the depth charges or torpedoes, and speed off.

Speed is the thing. That's why modern destroyers must be stripped of every pound of excess weight—and why lightweight sheet steel is used wherever possible, instead of heavier plates. Sheets are found in a lot of places on board the modern destroyer.

From the light-gage, zinc-coated ventilating ducts to the heavier bulkheads, torpedo tubes, and deck structure, Bethlehem Sheet Steel is out there on the Seven Seas with the U. S. Navy, in destroyers, in P.T. boats, and in heavier fighting ships. In cargo vessels, too.

In fact, in every phase of the war—in mechanized equipment for the Army, in submarine net buoys, in ductwork and roofing in hangars and war factories—Bethlehem Steel Sheets are at work, giving the same good service as in their former peace-time applications.

**BETHLEHEM
STEEL SHEETS**



BETHLEHEM STEEL COMPANY



GOOD LOOKING!—We mean the new design-finish—now a part of IMPROVED A-R-A SHEETS. This design gives a more attractive appearance to the fabricated forms and shapes used in your duct work. NOW you have the best constructed sheet steel substitute on the market and with it you can make the most attractive and best looking fabricated forms and shapes. The unusual design eliminates need for painting and does not show soil marks.

You can roll A-R-A Sheets into round pipe, cut and fabricate them into ducts, fittings and irregular shapes right in your own shop or on the job and with your regular sheet metal tools.

Write today for our free 16-page illustrated booklet No. 89-A which describes the many outstanding features that are possible only in A-R-A Sheets.

GET GENUINE A-R-A SHEETS FROM YOUR JOBBER

4101 WEST
TAYLOR ST.

GRANT WILSON, INC.

CHICAGO
ILLINOIS

New G-E advertising to help you get Summer Service...

Every G-E Dealer who services heating equipment should be interested in the advertisement reproduced at the right, which will appear in May issues of *American Home* and *Better Homes & Gardens*.

It is the first of several messages urging home-owners to have their heating plants checked thoroughly this summer—urging them to call *G-E Dealers* for this work, no matter what make heating plant they have.

We believe this advertising will help you in two ways:

1. It should help you to get *added* service business this summer, spreading the work over slack months and avoiding some of the rush next fall;
2. It should help to put you in touch with good prospects for new G-E heating equipment after the war.

We're sure this practical idea—backed up by our national advertising—can help you in these difficult times. But don't expect the advertising to do it all alone. Do your part by going out after this servicing business as soon as cold weather ends. *General Electric Company, Heating Division 3533, Bloomfield, New Jersey.*

GENERAL  ELECTRIC



**"WELL, BOSS
... WE MADE IT!"**

"A tough winter, for sure
... but I limped through,
cracked grate and all. Still
kinda groggy... but get
my innards checked over,
Boss, and I'll show you
some real hot stuff when
winter socks us again."

Maybe it seems a bit "previous"—but right now really *is* the time to have your heating plant serviced... mechanics will be a lot scarcer, and busier, next fall. No matter what furnace or fuel you're using... to avoid possible service headaches later on, call your local G-E Dealer today!

Also our 40 page booklet, "Tips on Fuel Conservation," can be mighty helpful to you, now and later. For free copy, address General Electric Company, Heating Division 3125, Bloomfield, New Jersey.

GENERAL  ELECTRIC

HERE'S YOUR FILE OF CRESCENT "TOOL NOTES"

Helpful tool information covering the use, maintenance, repair and conservation of Crescent Wrenches, Pliers, Snips, Hack-saws, Screwdrivers, Cold Chisels, Punches and Nail Pullers. The Set contains 8 sheets, 8½ x 11", punched for standard 3-ring binder and stapled between serviceable covers.

Write for a copy today. For classroom and bulletin board use, sets can be furnished unstapled and without covers.

TOOL NOTES
Maintenance and Repair
Suggestions to Prolong Tool Life

No. 1 HOW TO KEEP CRESCENT WRENCHES IN GOOD WORKING ORDER

Regardless of war or shortages, a good mechanic always keeps his tools in excellent shape. Today, however, difficulty of replacement is perhaps the strongest argument for tool conservation. This is the first in a series of informative advertisements intended to help you make your "Crescent" and "Crestoloy" Tools last longer. Look for "TOOL NOTES" regularly.

With adjustable wrenches, as with most tools, abuse and neglect are the commonest cause of failure. Keep your wrenches clean... and oiled. Dirt or rust accumulations on the knurl or other moving part will make adjustment difficult. Don't use your wrench as a hammer... and don't hammer on the handle to start or "set" a nut. Never "overload" any tool. The handle length of your wrench is carefully computed to provide safe leverage at maximum opening. If you extend the handle length with a piece of pipe or tubing you are taking chances with most wrenches. The 15", 18" and 24" sizes of "Crestoloy" Wrenches (with tapered handles) have sufficient strength, however, to permit this practice.

USE YOUR WRENCH CORRECTLY

Generally speaking, the CRESCENT Wrench should be turned in the direction indicated by the arrow in the drawing. However, when nuts are being tightened or loosened in close quarters, it is permissible to use the wrench either way. That is why the jaws are at an angle to the handle. Main point to remember is to have the jaws TIGHT upon the nut being turned. If this precaution is observed, the wrench will not slip and a good, hard pull can be exerted without fear of bruised knuckles or skinned fingers.

REPAIR PARTS AVAILABLE

Jaw, Knurl, Spring, Pin

Broken wrenches can be repaired with these Crescent Parts, sold by hardware dealers. Ask for part by name, stating the size of your wrench and whether "Crescent" or "Crestoloy" as marked on handle. Be sure to replace knurl same end to as removed, or teeth will not line up.

CRESCENT TOOLS
Give Wings to Work

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.

CRESCENT TOOL CO., JAMESTOWN, N. Y.



DECORATED FOR EFFICIENCY... IN ACTION!

You have seen many Ilg advertisements during the past 37 years . . . most of them dealing with the high quality of Ilg products. In *this* ad, we'd like to tell you about Ilg-Men and Ilg-Women . . . the workers in our plant who with patriotic zeal . . . with a minimum of plant expansion . . . have *doubled*, then *tripled* their production of vital heating and ventilating apparatus for our armed forces and essential war plants. Fighting their *second* World War on the factory front, these serious-purposed Americans proudly wear their cherished "E" emblems . . . tributes gratefully paid for their efforts by the Army and the Navy!

Free Brochure!

Colorfully pictures Ilg contributions to World War II. Free . . . send coupon or phone nearby Ilg Branch Office . . . today!



VITALIZED VENTILATION

AND AIR CONDITIONING
AIR CHANGE...NOT JUST AIR MOVEMENT!

ILG ELECTRIC VENTILATING COMPANY
2871 NORTH CRAWFORD AVE., CHICAGO, ILLINOIS
Send free copy new Ilg War Work Brochure

Firm Name _____

Individual _____

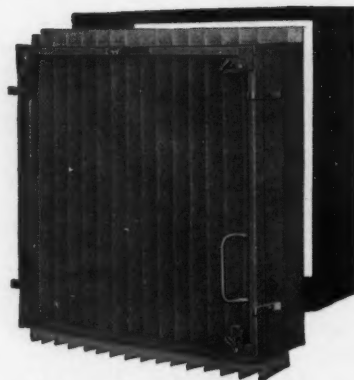
Address _____

City _____ State _____

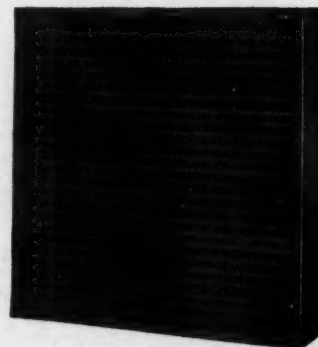
AAF Offers a Complete Line Of Air Cleaning Equipment



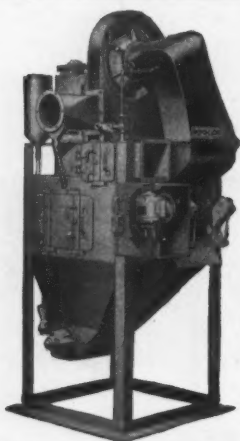
AAF Airplane Engine Intake Filter developed in cooperation with Army and aircraft engineers. Send for Bulletin No. 306.



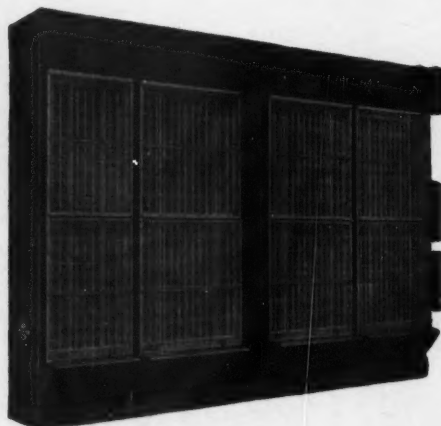
AAF Airmat Dry—Filter extensively used in Ordnance and Powder Plants—approved by National Board of Fire Underwriters. Send for Bulletin No. 230B.



AAF permanent washable viscous unit filters for cargo ships and industrial plants. Ideal for heavy-duty service. Send for Bulletin No. 201D.



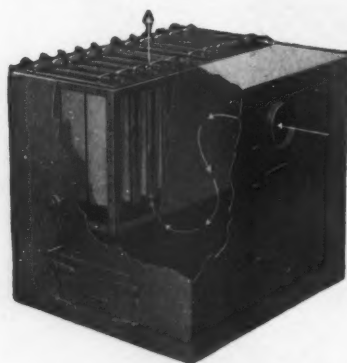
AAF Roto-Clones Type W (wet) and Type D (dry) are used to collect Foundry dusts—and in the machine tool and chemical industries. Send for Bulletin No. 274A.



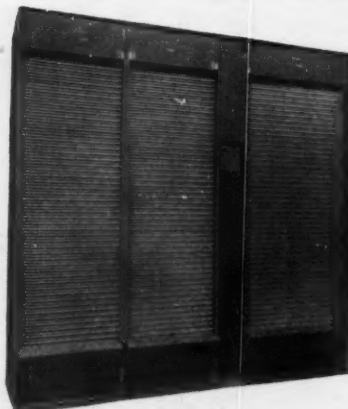
AAF Electro-Matic self-cleaning filter is widely used in aircraft motor manufacturing plants. Send for Bulletin No. 250C.



AAF Cycoil air cleaners are used on gasoline and diesel engines and on compressors. Send for Bulletin No. 130C.



AAF Airmat Dust Arrester collects dust from buffing and polishing operations. Used by aircraft engine parts and supercharger manufacturers. Send for Bulletin No. 280.



AAF Automatic filters for atmospheric dust control. Widely used in airplane assembly plants, tank arsenals, etc. Send for Bulletin No. 241.



AAF permanent unit filter for cleaning air supplied to barracks and theatres, in army camps and cantonments. Send for Bulletin No. 201D.



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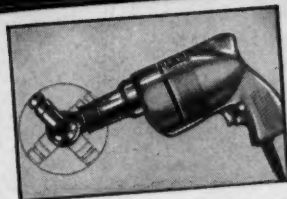
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HEAVY DUTY
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FOR "ROUND-THE-CLOCK"
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ELECTRIC **TOOLS**

★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★



ECLIPSING the Rising Sun? . . . Yes, that is our job. And it is not a small one either. Endowed with that old "never say quit" spirit that is instilled in the heart of every true American, the boys at the machines and on the assembly lines at the Luxaire plant are working tooth and nail to eclipse the production of the previous day's output of materials of war. This is the job they have pledged themselves to do—with the one thought uppermost in their minds, that with the constant eclipsing of the previous day's job, the bigger the eclipse becomes on the sons of the Rising Sun. They are working for the glorious day of the TOTAL ECLIPSE—an eclipse they will look at without smoked glasses.

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THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO**



Better Get Acquainted with OPA and WMC

THERE seems to be some indication—if questions at conventions and correspondence is any proof—that contractors are just now beginning to realize that in 1943 every shop owner will have to comply with still more regulations applied by agencies which were not overly important in our hectic life in 1942.

The first agency which is now giving our industry more headaches is Office of Price Administration. OPA was just beginning to be problem to reckon with as 1942 drew to a close. In brief, the problem posed by OPA is conformity with regulations which tell us how much we may charge for the materials, labor and services we sell.

We got our first taste of price control on February 20, 1942, when a schedule was released on fuel oil storage tanks. The next price schedule came in August, 1942, with MPR 188 which established the manufacturers' price of certain building products (like furnaces) at the March, 1942, price level. Effective July 1, OPA placed ceilings on service sales (like oil burner service) and on August 20 announced MPR 204 which ceilinged prices on materials and products frozen in inventory. Welding was placed under MPR 165 (shop work only) in July.

Now, as we go into 1943, a most inclusive price regulation, MPR 251, places a maximum price on materials, labor, margin, overhead and, on jobs selling for over \$500 institutes a reporting procedure which will require more bookkeeping. MPR 251 was described in some detail in the February, 1943, issue, page 20, and more reporting forms and still further discussion appears in this issue on page 22.

From our observation this industry has not generally paid enough attention to MPR 251. It is high time everyone does so. There's stiff penalties for violation and some customer is going to hook some careless contractor if we fail to report or furnish certification.

The other agency which we will have to observe and study carefully this year is War Manpower Commission. WMC is getting set to operate a blanket employment service. Even more important, the mechanics we employ in labor critical areas cannot quit (under certain circumstances) nor can certain sizes of shops hire and fire at will. It is likely that before this year is over our em-

ployers will have to prove their right to keep mechanics and much paper work may have to be done to get mechanics and service men deferred.

This growing WMC problem is still further complicated by OPA-WMC 48-hour week order in labor critical areas as described in this issue on page 37.

And to make the situation still touchier, the Fair Labor Standards Act must be complied with if your mechanics are now paid under union labor agreements or if you are working on government contracts or war contracts. In certain states there are also state or local laws limiting hours of work per week and laws relating to the payment of wages or overtime.

When WMC gets in full operation it is expected that problems of wage rates, hours of work, hiring and firing, will, to a large extent, be placed for decision before the Management-Labor committees of the local WMC office.

There is, and will be, as these OPA and WMC laws get into full control, specified procedure which must be complied with; also reports which must be filed properly; also definite regulations which the contractor must observe and, if what has happened to small retail business is any criterion, there will be laws and regulations on top of more laws and regulations as time and experience shows certain modifications and extensions are required for full compliance.

The shop most affected will probably be the shop employing more than eight men (counting office help) and doing work for war contractors or for firms in interstate business. The one-man shop—up to now—has been purposely avoided, but it is not completely safe to gamble that such a shop will not, in the end, also come under control.

Certain patterns for compliance and procedure are emerging. Within a few weeks the basic formula probably will be in full operation by which time every contractor covered should be prepared with forms and procedure which will make compliance automatic. We will publish all pertinent information, as we have up to now, but it will be well, we think, for every employer to visit the local OPA and WMC office and get at first hand all forms, information, and copies of orders.

Unless we miss our guess, OPA and WMC will, in 1943, be fully as much of a problem to this industry as WPB.

Here are Milwaukee OPA suggested forms for

Maximum Price Regulation No. 251

We wish to emphasize that these four forms are not official. These forms do, however, furnish the data OPA requests and are an excellent form for keeping estimate and actual costs. We believe that simpler forms are desirable and welcome copies of forms readers are using with local OPA approval.

IN the February, 1943, issue, page 20, we stated that no official form is required for reporting to OPA jobs over \$500 whether lump sum, or time and material, fixed fee or cost plus. We showed letters which presented all the data asked for in the text of the regulation and also a typical contractor's estimate and cost sheet. This cost sheet also shows the necessary data and which can be filed with OPA.

At the Wisconsin Association convention, Neil Stoddard of the Milwaukee office of OPA, handed out the forms which we here reproduce with the statement that these forms satisfy OPA and show the minimum information required by the regulation.

These forms are *not official*—our February statement that there are no official forms still holds good. But for most purposes a form is better than a letter, either this form or something similar may save time and streamline the procedure used by every contractor.

We also believe that a form of this type will go far to compel the contractor to establish his overhead figure and keep accurate track of his costs. If this MPR 251 is enforced it is going to be pretty rough going for the contractor who, up to now, has refused to keep accurate records; who won't establish his actual overhead; who prices each job on the basis of "the cost needed to get the job."

Most Similar Job Seems Needless

One item in the report sheet for the Lump Sum contract was questioned by the editor at the Wisconsin meeting and has since been discussed with Chicago OPA attorneys. That is Item 6 which asks the contractor to identify by name or number a "most similar job" and give the selling price of that job. If this item is left in the form it means that the contractor should pick out of his job records a job as nearly like the one being reported as possible (completed prior to March, 1942) and give the selling price in Item 6.

We do not see why this is necessary. The regulation defines exhaustively how much you may charge for materials and labor and exactly what items you can include in your overhead percentage; you have to show how your overhead is figured (on labor and material or productive labor) so why is it necessary to go to all the trouble of picking out a "most similar

Right—Suggested form for Lump Sum job estimates. To be filled in and filed with OPA when you get a job. All items are your estimates. See text for our question of Item 6—"Most similar job."

REPORT TO OFFICE OF PRICE ADMINISTRATION AS REQUIRED BY MAXIMUM PRICE REGULATION #251 SECTION 1397.57(a) - (6) - LUMP SUM - FIRST REPORT

CONTRACT NO. _____ Date of Contract _____ Date Reported _____

(1) **Reporting Firm**
(a) Name _____ Telephone _____
(b) Address: Street _____ City _____
(c) Name & Title of Reporting Official _____

(11) **Description of Project**
(a) Purchaser _____ Telephone _____
(b) Address of Purchaser _____
(c) Final Owner or Name of Project _____
(d) Location of Work _____
(e) Scope of Project _____

(111) **Cost Estimates (Based on ceiling prices)**

* 1. Estimated cost of all materials and supplies f.o.b. destination..... \$ _____

2. **Estimated Cost of Labor**
(You may use increases in wage rates in your area up to and including July 1, 1942)

Craft	Est. Hrs.	Rate	Total
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
Total Estimated Labor Cost -			\$ _____

3. **Estimated Other Direct Cost**
(List sub-contractors below)

(a) Name (If known)	Class of Contr.	Estimated Amt.
_____	_____	\$ _____
_____	_____	\$ _____
_____	_____	\$ _____
_____	_____	\$ _____
_____	_____	\$ _____

** (b) Other Direct Costs- \$ _____ \$ _____

4. Estimated Reserve for Contingencies (See Section 1397.57 (a)-(4)) \$ _____

5. Total Estimated Costs (Total items 1-2-3-4 above) _____

6. **Margin Ceiling**
*** (a) Identification of "most similar job" used (Project number or name of owner; date of contract): _____

**** (b) - % Margin Ceiling _____ %

7. Margin in Dollars (Col. 5 multiplied by Col. 6(b)) _____

8. TOTAL CEILING PRICE (Sum of 5 and 7 above) _____

9. CONTRACT PRICE.....\$ _____

job." We believe this is simply putting the contractor to a lot of needless work.

Mr. Stoddard contends the regulation asks for this where the regulation says: "A margin to include administrative, supervisory, overhead costs and profit shall be shown and the margin determined hereunder must be supported by records, or other competent evidence, of previous transactions occurring during the base period. These records and evidence must be produced on request of the Office of Price Administration."

Our contention is that if you keep records you can produce this evidence if necessary, but it is going to take a lot of time to dig out a "most similar job" every time you file a report.

The question was also raised by Wisconsin member Schaar that the "most similar job" might well be a job on which you lost money because you did not include all the permissible items of overhead, administrative costs, etc. In such a case, the contractor would be showing himself a chiseler if the reviewer didn't study all the permissible items of cost to see if the job was correctly priced.

Mr. Stoddard said a contractor might go through his file of job cost records and pick out a number which are typical of his operations and then as reports are filed use one of these as the "most similar job" over and over again. But the objection was raised that in this business—especially today—it is seldom

that a job is like any other, particularly on quantities, or labor time, so if the contractor is conscientious he probably will have to use several dozen or a hundred past jobs.

None-the-less these forms are better than hit-or-miss reporting and we wish to make a few explanations.

How To Fill In the Form

On the first report for a lump sum contract Items 1 and 2 are self-explanatory except that Item 2 (e) should be only a few words—don't try to write a detailed description—it's not necessary.

Under Item 3 (1) give the cost of materials at current prices. If you use materials you bought earlier at lower prices don't use these prices, but use current prices. Of course, if you really want the job you can use old prices.

Under Item 3 (2) the rate of labor you show should be the labor rate paid on the job if this is different from the rate you pay at home. Also if you have shop labor at one rate and field labor at a different rate break up your two labor items and show the rate for each as a separate item.

Under Item 3 (3) (b) "other direct costs" show here your overhead and administrative costs. Those permissible are such costs as rental of equipment, Social Security taxes, unemployment compensation, licenses, workman's compensation, public liability, insurance, traveling expenses for the job, telephone and telegraph, watchmen, temporary heat, surveys, hauling, etc. In short, the items which should be included as "overhead" in any good accounting system.

Items 3 (4) and 3 (5) were discussed in our February article or are self-explanatory.

If the "most similar job," Item 6, is ruled out, then Item 7 should show in dollars the profit you expect to make. To arrive at Item 7, take the total cost of materials, add the total cost of labor, add your customary percentage of overhead and to all this add the profit you want to make and establish the selling price for the job.

The total of Items 3 (1) (2) (3) (4) and 7 fix the total ceiling price or Item 8.

What you choose to sell the job for is Item 9. This need not be the ceiling price of Item 8—especially if you're hungry.

How To Figure "Most Similar Job"

However, if we must keep in the form Item 6 (a) and show the "most similar job" the procedure with respect to Items 6 (b), 7, and 8 will be different. Mr. Stoddard explained it like this: "Take the cost of the items covered under Section 3 (1) (2) (3) (4) from your cost sheet of your most similar job. This total will be your cost on your most similar job. Subtract this cost from your contract price on your most similar job to find your margin on that job. This becomes Item 6 (b). Divide this margin by your cost on this most similar job and the result will be your percentage margin markup for the contract you are now pricing.

Whether the "most similar job" item will be required or not may be known about the time this March issue goes into the mail when a revision of MPR 251 is expected and with the amendment some of the problems of reporting may be re-defined and clarified.

REPORT TO OFFICE OF PRICE ADMINISTRATION AS REQUIRED BY MAXIMUM PRICE REGULATION NO. 251 SECTION 1397.57 (a)-(7)-LUMP SUM - SECOND REPORT

CONTRACT NO. _____ Date of Contract _____ Date Reported _____

(1) **Reporting Firm**
(a) Name _____ Telephone _____
(b) Address: Street _____ City _____
(c) Name & Title of Reporting Official _____

(11) **Description of Project**
(a) Purchaser _____ Telephone _____
(b) Address of Purchaser _____
(c) Final Owner or Name of Project _____
(d) Location of Work _____
(e) Scope of Project _____

(11) Report of Actual Costs:			
	(A)	(B)	(C)
No. Item	Actual Cost	Amt. over Estimate (Losses)	Amt. under Estimate (Savings)
1. Materials and Supplies	_____	_____	_____
2. Labor	_____	_____	_____
3. Other direct Costs	_____	_____	_____
4. Contingencies	_____	_____	_____
5. TOTALS -	_____	_____	_____
6. Ceiling Price #8 (See First Report)	_____	_____	_____
7. Contract Price	_____	_____	_____
8. Cost - 5(A) Above	_____	_____	_____
9. Margin in Dollars	_____	Plus	_____
10. Margin in Percentage of Cost (plus or minus) (No. 9 above divided by No. 8 above)	_____	_____	_____
11. Margin in Percentage as estimated in First Report	_____	_____	_____

This suggested form is to be filed when job is completed and your actual costs are known. Note columns for profit or loss. Remember, you return nothing to anyone even though your profit is excessive.

Follow-up Report

As explained in the February issue, after the job is finished (this is still Lump Sum work) you must file with OPA a second report which shows *what your final, actual costs were*.

Right off we wish to point out, as Mr. Stoddard did, that this is in no sense a checkup on how much money you made. If you got the breaks and made a larger than normal profit—do not be ashamed or alarmed—you won't go to jail and you won't be penalized. OPA assures us they know the construction industry is full of surprises and more-profit-than-normal is quite all right.

Another form suggested by Mr. Stoddard for this follow-up report is shown. Items (1) and (2) should be identical with Items (1) and (2) on the first report.

Under Item 3 there are three columns and you show

REPORT TO OFFICE OF PRICE ADMINISTRATION
AS REQUIRED BY MAXIMUM PRICE REGULATION NO. 251
SECTION 1397.56(b) - COST PLUS - REPORT

CONTRACT NO. _____ Date of Contract _____ Date Reported _____

(1) Reporting Firm

(a) Name _____ Telephone _____

(b) Address: Street _____ City _____

(c) Name & Title of Reporting Official _____

(11) Description of Project

(a) Purchaser _____ Telephone _____

(b) Address of Purchaser _____

(c) Final Owner or Name of Project _____

(d) Location of Work _____

(e) Scope of Project _____

(11) Estimated Cost

- Estimated cost of all material, supplies, labor, other direct costs furnished by you under this contract. Materials and supplies at ceiling prices of your suppliers, labor to include area increases up to and including July 1, 1942, other direct costs as indicated in Release attached to MPR #251, page 2, col. 3, under question "What is meant by other direct costs?" Give this in one lump sum, including all sub-contracts, but estimate the sub-contract below separately.....\$ _____

List sub-contractors below:

Name (if known)	Classification	Est. Amount
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Margin Ceiling:

- (a) Identification of "most similar job" used.
Project number or name of owner and date of contract

** (b) Percentage Margin Ceiling _____ %

3. Contracted Percentage Margin
Mark-up on Costs _____ %

4. Margin dollars based on Estimated
Cost-No. 1 multiplied by III (3A) \$ _____

5. If "fixed fee" dollar-and-cents fee fixed \$ _____

6. Estimated total cost of contract to purchaser \$ _____

Suggested form for Fixed Fee or Cost Plus contract. This is filed after job is finished and costs are known. No estimate form is filed with Fixed Fee or Cost Plus.

your *actual cost* in the first column, any losses from your estimates in the second column and any increased profits in the third column.

Just how this information can be of much use to OPA at this time we don't know, but we do believe that this is an excellent cost record form for every contractor to keep. It should already be a part of every cost system, but for those who never have kept this type of record, the information is invaluable. The information should show if your percentage for overhead is too small, too large, or just right and whether or not you are a good "guesstimator" on quantities of materials and required labor. After a few months of operation in this fashion, every contractor should be a better estimator.

Item 6 is self-explanatory; so is Item 7. In Item 8 and in Item 9 we find whether we broke even, lost money, or made more money than we aimed at.

Item 10 will show if the margin did work out comparably with the "most similar job" or whether our margin from job to job fluctuates all over the lot because of deviations in cost of materials, or labor, or breaks on the job. If Item 10 does vary consistently from Item 6 (b) on the first report, then there will be some evidence that margins of profit and margins of cost in the contracting business are not predictable and so are wasteful of time in figuring.

Item 11 is self-explanatory.

Certificate to Customer

As explained in February, a Certificate must be given the customer on completion of the work and a form which can be used for either Lump Sum or Cost Plus or Fixed Fee contracts is shown as suggested by Mr. Stoddard. Note that a copy of this certificate must also be mailed to OPA and a copy should be kept in the contractor's file.

Cost Plus or Fixed Fee Form

The fourth form suggested by Mr. Stoddard for the Cost Plus or Fixed Fee job selling for over \$500, again has Items 1 and 2 identical with the form for Lump Sum and should be filled in briefly.

There is one big difference in the Fixed Fee or similar job. A report, such as the form suggested, must be filled in and filed with OPA within 10 days of entering into a contract for such a job, says the order. These figures are estimates, of course, and represent your best judgment based upon cost arrived at as explained in the February issue.

However, no record report showing actual costs is necessary.

Mr. Stoddard suggested that to enter an estimate within 10 days after signing the contract might be silly on many Fixed Fee jobs for, after all, Fixed Fee jobs usually carry many changes (that's why a Fixed Fee job usually is awarded on a plus percentage basis) so it may be that this clause will be changed to allow the report to be filed *at the completion of the job* when such a report will mean something. Perhaps this will be clarified in the amendment.

Item 3 (1) is self-explanatory in the form.

Item 3 (1) (a) and Item 3 (1) (b) are arrived at just as in the Lump Sum form.

Item 3 (3) "Contracted Percentage Margin Markup on Costs," provides space for telling OPA what percentage you are going to get on the job.

(Continued on Page 88)

Interpretations, Amendments, Easements To Existing Orders

Can I Use Steel Furnaces?

War Production Board,
Plumbing and Heating Division,
Washington, D. C.

Gentlemen:

Order L-22-a states, in section 1021.2 (3): A Military furnace means any furnace manufactured for delivery to Army, Navy, War Shipping Administration, Maritime Commission, or Defense Plant Corporation. However, on form PD-704, which is the application, in the upper right hand corner block, is a line for "War Housing, Public and Private."

The question is, do you consider public or private war housing to be a use for steel furnaces which will receive consideration?

What would be the requirements under which steel furnaces will be approved for public or private housing?

For example, suppose a Chicago private war housing builder *wishes to use* steel furnaces rather than cast iron furnaces because all the houses completed in his housing project have steel furnaces. Can this builder file an application for steel furnaces under PD-704 and will he receive any consideration?

As a second example, assume that a Chicago private war housing builder *cannot get* cast iron furnaces in time to open his houses as scheduled, but can get steel furnaces which are not yet produced. Can this builder file a PD-704, and will he get any consideration?

As a third example, assume that the so-called PBA-18 war housing furnaces (60,000 Btu, with blower and filters, upright casing measuring 26x26" on the floor) is not available at the required delivery date in cast iron, but might be obtainable in steel. Could a private war housing builder file a PD-704, and would he receive any consideration?

Sincerely yours,
AMERICAN ARTISAN.

WAR PRODUCTION BOARD

Keeney Publishing Company,
6 North Michigan Avenue,
Chicago, Illinois.

Gentlemen:

Your letter of January 12, regarding the operation of Order L-22-a has been received.

Regarding the question you raise in the first paragraph of your letter, we may say that Form PD-704 is used for appeals from a number of other Orders besides L-22-a which is the reason for the line having to do with "war housing, public and private." This has nothing to do with Order L-22-a as a military furnace may not be used in public or private war housing.

It is extremely unlikely that any favorable consideration will be given to an application to use steel furnaces on public or private housing, unless cast iron furnaces absolutely cannot be used. Accordingly, in

the hypothetical case you state the builder would have to complete his project with cast iron furnaces even though it was partially completed already with steel furnaces. It is also exceedingly unlikely that he would be granted permission to use steel furnaces simply to get the houses opened as scheduled unless the delay caused by the purchase of cast iron furnaces would be considerable. If such were the case, we would suggest that PD-704 be filed and accompanied by a letter stating the case completely particularly regarding the extent of the delay.

This would also apply to the third example mentioned in your letter.

Very truly yours,
JOSEPH F. WILBER, Director,
Plumbing and Heating Division.
By: J. T. KELLY, JR., Chief,
Inquiry Section.

Products Under CMP

War Production Board,
Plumbing and Heating Branch,
Production Control Section,
Washington, D. C.

Attention: Mr. Morgan Johnson.

Dear Mr. Johnson:

Office of War Information release WPB-2320, dated January 7, announced the distribution of the Official Controlled Materials Plan, Class B Product list.

At the Cleveland convention, we were told decision had not been made if furnace manufacturers and furnaces were to be controlled under CMP, Class B, Group 2 products and that Class B, Group 2 Products would probably not operate as strictly CMP units, but would continue to obtain their materials for furnace production under PRP.

Has a decision now been made and, if so, will (1) cast iron furnace manufacturers obtain materials under CMP or PRP, and (2) will present steel furnace manufacturers obtain materials under CMP or PRP.

If either type of furnace manufacturer obtains his materials under CMP, will his procedure be to file a bill of materials with OCS, or will the bill of materials be filed with you for final consideration by OCS?

Sincerely yours,
AMERICAN ARTISAN.

WAR PRODUCTION BOARD

AMERICAN ARTISAN:

We are enclosing copies of CMP Regulation 1, Official CMP Class B Product List, Forms CMP-4A and CMP-4B, with Instruction Sheets, and CMPL-12 (Supplemental List of Plumbing and Heating Equipment).

It is felt that these enclosures should adequately answer your questions in regard to CMP.

In direct answer, however, to the questions in the third paragraph of your letter concerning manufac-

turers of cast iron and steel furnaces, may we say that if the material requirements of such manufacturers contain any "A" Products, or controlled materials needed in the fabrication of such furnaces, Form CMP-4B must be filed.

In answer to the last paragraph of your letter, may we refer you to Section D, Part 6, of CMP Regulation 1 which states that, "... Bills of materials shall be filed only when and as called for by such Claimant Agency, Industry Division or other consumer."

Allotments will not be made on the basis of Bills of Materials, but on the basis of CMP-4 Applications.

Very truly yours,

JOSEPH F. WILBER, Director,
Plumbing and Heating Division.
By: LIONEL E. WIESER,
Deputy Chief,
Distribution Control Section.

Editor's Note: The CMP official booklet and CMP Regulation No. 1 lists products requiring materials obtained by CMP-4B, 4E, 4A. Each separate application must be made for each class of product marked with an asterisk. Also, the list shows whether the materials should be applied for by units, dollars, pounds, etc. This list shows the following products under CMP-4B application—

- * Fans, blowers, Exhausters (except turbo-exhausters and domestic propeller type fans (by dollars).

- * Dust collecting equipment, industrial (by dollars).

- * Stokers, industrial over 36 square feet grate area (by units and square feet).

- * Heat exchangers (by dollars).

- * Metal working machinery including power driven machines, tools, welding equipment (by dollars).

- * Heating stoves, domestic, including space heaters, floor furnaces, wall furnaces except electric (by dollars).

- * Warm air furnaces including furnace burner units as defined in WPB Order L-22 (by dollars).

- * Warm air distribution equipment—registers, stove and smoke pipe (by dollars).

- * Burners, gas or oil (by dollars).

- * Stokers, domestic, under 36 sq. ft. (by units).

- * Heating system controls including all temperature control devices (by dollars).

- * Doors and windows, metal (by dollars).

PD-1A's Filed Locally

A STEP toward decentralization of War Production Board activities was made February 24 when a new WPB administrative directed that, after March 1, applications for priority assistance on Form PD-1A should be filed with the nearest of the 131 WPB district offices, and authorizes the 12 Regional Offices, beginning March 15, to assign preference ratings on PD-1A certificates to deliveries of materials valued at \$100 or less.

The preliminary value limitation of \$100 probably will be progressively stepped up as the field offices assume greater responsibilities and within six weeks more than 80 per cent of all PD-1A applications will be handled entirely by the Regional Offices.

Under the new procedure, WPB's field offices will be responsible for seeing that all PD-1A applications are properly filled out and will forward them to Washington, or to the Regional Offices if they fall within the value limitations set by the order.

In the early days of the priorities system, Form PD-1, later supplanted by PD-1A, was the principal instrument in the assignment of preference ratings to orders for scarce materials. Later, the Production Requirements Plan, now being superseded by the Controlled Materials Plan, provided the means for distribution of the great bulk of material required for military and essential civilian production, and receipt of the PD-1A forms has dropped from a one-time peak of more than 60,000 a week to only a little more than one-half of that number at the present time. The fact that CMP provides central control over the distribution of scarce materials to claimant agencies makes it possible to decentralize handling of PD-1A's.

Ratings assigned on PD-1A certificates are known as "single-shotters," since the priority assistance they provide is applicable only to the particular delivery for which help is requested. They do not establish the continuing assistance provided by PRP and CMP, and by orders in the "P" series covering specified industries.

PD-105, New Housing Form

THE policy on war housing was made effective February 10 by the revision of housing application forms for preference rating assistance.

This action establishes a uniform construction application form to be used for all residential construction, regardless of whether the work is to be publicly or privately financed, to replace the several forms heretofore in use. In addition, the new form, PD-105 Revised, provides for a change in the manner of reporting material lists so as to conform to schedules of the Controlled Materials Plan.

The most important revisions are:

Provisions for the sale of privately-financed housing are eliminated. War housing *must now be rented* to war workers as defined by NHA, WPB, and WMC. Such housing must be rented for at least four months, at the end of which time it may be sold to the war worker occupying it.

Only critical material authorized by WPB may be incorporated in a war housing project. Critical material in excess of the allowances may not be used, regardless of how it may be obtained.

NHA and WPB will make all projects conform with the latest conservation and occupancy regulations.

WPB will allot materials by calendar quarters to meet specific approved programs.

War housing must be accessible to the industry it is intended to serve.

A large proportion of the total housing program will continue to comprise temporary-type construction.

Inspection service will be provided by NHA to insure that projects conform to regulations. WPB will effect compliance.

The new application form PD-105, Revised, which provides the framework for making effective the joint policy declaration, will eliminate all other housing applications except that required for farm housing.

The new materials list will report all critical materials going into housing construction in such a way that WPB may easily transfer these items into terms of raw materials to be allocated under the Controlled Materials Plan. The list must show all critical materials to be incorporated in the structure, and also all

material for which priority assistance will be required.

The revised application form, which is now operative, not only provides for new publicly and privately financed housing, but also controls privately-financed remodeling as well as the so-called "hardship" cases. These latter are construction cases which arise as a result of homes being destroyed by fire or where new homes are made necessary because of reasons of health or safety.

The policy on war housing has been further implemented with the revision of Preference Rating Order P-55.

The amendments to the order brought these principal changes:

1. Preference rating orders will be addressed to "owners" in the future rather than to "builders."

2. Only critical materials which have been specifically approved may be used in war housing structures.

In addressing preference rating orders to owners rather than builders, the War Production Board acted to eliminate operational confusion which had existed in many cases in field offices, as well as with the public.

The restrictions on the use of material provide the basis for the material conservation agreements outlined in the joint declaration of policy. Where formerly a builder could use any material which he could obtain without a preference rating, he is now restricted to only that critical material which is authorized by WPB. Critical material in excess of allowances may not be used, regardless of whether taken from stock, or made available by gift or loan.

Service Mechanics Exemption

THE War Manpower Commission has certified that repair and hand trade services is an activity essential to the support of the war effort.

2. This bulletin covers the following essential activities which are considered as included within the list attached to Local Board Release No. 115, as amended:

- (a) *Repair and hand trade services:* Services offered by our industry are: *stoves, electric appliances and motors, heating equipment, repair of roofing, and plumbing installations in domestic, commercial, and industrial buildings.*

3. The following list of occupations in repair and hand trade services are occupations requiring a reasonable degree of training, qualification, or skill to perform the duties involved. It is the purpose of this list to set forth the important occupations in repair and hand trade services which must be filled by persons capable of performing the duties involved in order that the activity may be efficiently maintained. This list is confined to those occupations which require six months or more of training and preparation.

4. Under this bulletin consideration should be given only to those persons trained, qualified, or skilled to render all around repair services, and then only to the extent and to the number of such persons required to meet the minimum essential needs of the community.

5. In classifying registrants employed in these activities, consideration should be given to the following:

- (a) The training, qualification, or skill required for the proper discharge of the duties involved in his occupation;

- (b) the training, qualification, or skill of the registrant to engage in his occupation; and

- (c) the availability of persons with his qualifications or skill, or who can be trained to his qualification, to replace the registrant and the time in which such replacement can be made.

(Signed) Lewis B. Hershey, Director.

CRITICAL OCCUPATIONS

Repair and Hand Services

Persons in the following occupations, trained, qualified, or skilled to render all around repair services on types of equipment specified in this bulletin should be considered for occupational classification only to the extent and in such numbers as may be required to meet the minimum essential needs of the community.

Electric-Appliance Serviceman

Foreman. (This title covers foremen who are engaged in supervisory duties in connection with repair services as described above for this activity group. It includes individuals who exercise independent judgment and assume extensive responsibility for repair services. It does not include foremen of common labor.)

Furnace Installer and Repairman

Gas Appliance Serviceman

Oil-Burner-Installation and Serviceman

Plumber

Roofer

Sheet-Metal Worker (all around)

Tool Maker

Welder (all around).

Tin Plate Released

SEVERAL new uses for tin plate and terne plate will be permitted under Conservation Order M-21-e as amended December 11.

New permitted uses for tin plate for our industry are maple syrup evaporators and linings of drying chambers for milk and egg dehydration.

Other changes made by the amended order are as follows:

1. Materials outside the gauge range from 75 to 112 pounds per base box, which were in inventory on May 16, 1942, are excluded from the restrictions of the order.

2. The provisions requiring reports of frozen stocks have been eliminated.

Asphalt Roofing Restrictions

RESTRICTIONS applied to asphalt or tarred roofing products and asphalt shingles affect only those materials and do not limit the manufacture of building papers and other tarred materials and asphalt products, according to the first Interpretation of OPA Limitation Order L-228.

Special asphalt or tarred saturated or coated products are excluded from the provisions when manufactured for an industrial use.

NOTICE!

We expected to publish on this page an article entitled "How to Get Materials for Maintenance and Repair." The manuscript was submitted to WPB for checking but after several days' consultation WPB says our article is not "too wrong," yet it is not EXACTLY correct. Because this problem of getting and extending ratings for materials used in maintenance and repair is one of our really tough "nuts" we want our explanation to be correct in every detail. So we are taking out our article even though some forms are running on the press and in April we will publish the article as agreed upon by all agencies concerned.

Loans on Frozen Gas Furnaces

EVIDENTLY our exchange of letters with WPB on the subject of what to do with stocks of frozen gas furnaces, as published on page 24 of the December, 1942, issue, did not give all the information some readers required. The December report explained how frozen stocks can be moved but did not give all the details of the loan or sale. For the benefit of readers with frozen gas furnaces, following is the official explanation of the law:

LOANS TO DEALERS IN GAS BURNING EQUIPMENT

*Under the Murray-Patman Act
(Public Law 549—77th Congress)*

The Reconstruction Finance Corporation is prepared to make loans to dealers in gas burning equipment pursuant to the following terms and conditions:

- (1) **ELIGIBILITY:** A loan may be made to any dealer, a substantial part of whose business consists of dealing in and servicing gas burning equipment, provided such dealer was regularly engaged in the business of offering gas burning equipment for sale as of June 1, 1942. Gas burning equipment as herein used shall mean any space heater, cooking equipment, warm air furnace, floor furnace, unit heater and conversion burner using gas as fuel and which is composed of metal to the extent of 50% or more by weight. Loans shall be made only against new gas burning equipment and no loan shall be made against gas burning equipment that is not in salable condition or that has suffered substantial damage or deterioration as the result of negligence or lack of proper care.
- (2) **DISBURSEMENTS:** The initial disbursement on account of the loan shall be in an amount not in excess of the net cost (exclusive of transportation cost) to

the dealer of the gas burning equipment against which the loan is made, plus the actual transportation cost to the place of business of the dealer (which cost shall be, in the opinion of Agency Manager, reasonable). In addition, the initial disbursement may include a reasonable allowance for the payment of the cost of storage, handling, servicing, insurance, carrying charges and other expenses incurred in connection with the care and preservation of the gas burning equipment against which the loan is made for each monthly period from August 11, 1942, with respect to all such equipment except space heaters with respect to which such monthly periods shall commence May 23, 1942, or the date of receipt of such gas burning equipment by the dealer, whichever is the later, to the date of the initial disbursement. Such allowances shall be only in such amounts as you shall deem reasonable having in mind the kind of storage, handling and servicing given to such gas burning equipment, the amount and nature of insurance carried and other carrying charges and expenses incurred in connection with the care and conservation of such gas burning equipment. The amount of such allowances for each monthly period is herein called the "Increment." Additional disbursements may be made from time to time up to the maturity date of the note evidencing the loan not more frequently than monthly, each in the amount of the increment. The security instrument or instruments obtained in connection with the loan should be so drawn as to cover such additional disbursements and such steps should be taken at the time of each such additional disbursement to assure that the lien of the Corporation on the gas burning equipment concerned secures such additional disbursement to the extent such is practicable and possible under local law.

- (3) **INTEREST RATE AND NOTE:** Loans made hereunder, and the notes and other instruments evidencing same, will bear interest at the standard rate of 4 per cent per annum. The amount of interest accrued on the entire indebtedness shall be paid quarter-annu-

ally. However, when advances are made monthly for purposes explained under "Disbursements," interest shall be payable monthly and may be deducted from such monthly advance. The note shall contain, among other provisions, a specific provision that the dealer shall be personally liable for any deficiency arising out of the failure of the payee to recover upon the sale of the collateral the full amount of the indebtedness evidenced by or incurred in accordance with the provisions of the note, except any deficiency caused by reason of any limitation upon the sales price imposed pursuant to the Emergency Price Control Act of 1942. Since the dates of the beginning of the freezing of rationing in connection with gas burning equipment were May 23, 1942 (with respect to space heaters) and August 11, 1942 (with respect to the other items of such equipment), the maturity date of the note in connection with space heaters shall not be later than December 23, 1943, and the maturity date of the note or notes in connection with the other items of such equipment shall mature not later than March 11, 1944 (i.e., not later than 19 months from the beginning of the rationing of such gas burning equipment).

- (4) **CLOSING PAPERS:** In addition to such documents as may be required at the time of closing the loan, Borrower shall be required to execute an agreement to store the gas burning equipment against which the loan is made in storage facilities satisfactory to the Corporation which shall, so far as is possible, afford a dry place for the storage of such gas burning equipment, free from dust. The Corporation shall also be satisfied that such gas burning equipment is in salable condition and has not suffered substantial damage or deterioration as a result of negligence or lack of proper care.
- (5) **INSURANCE:** Insurance policies shall be in effect covering the gas burning equipment offered as collateral in such amounts and executed in such form and

issued by such companies as shall be satisfactory to the Corporation, insuring such property against loss by fire or burglary. Provision shall be made in connection with such insurance policies, either by endorsement or by the execution of appropriate instruments, for the payment of all losses under such policies to the respective parties concerned, including this Corporation, as their interests may appear, such insurance to be paid for by the dealer.

- (6) **SERVICING:** Facilities satisfactory to the Corporation shall be made for inspection of the gas burning equipment at such intervals as deemed advisable and practicable by the Corporation, in order to ascertain that such gas burning equipment taken as security is being properly cared for and that such gas burning equipment does not appear to be suffering abnormal deterioration.

APPLICATIONS ARE REQUIRED IN TRIPPLICATE. In describing gas burning equipment, please state whether new or used, giving manufacturer's name, model and serial number, if any. Also manufacturer's name and serial number of motors and temperature controls, if any.

Location of Loan Agencies of the RFC—

Atlanta, Ga.	Minneapolis, Minn.
Birmingham, Ala.	Nashville, Tenn.
Boston, Mass.	New Orleans, La.
Charlotte, N. C.	New York, N. Y.
Chicago, Ill.	Oklahoma City, Okla.
Cleveland, O.	Omaha, Neb.
Dallas, Texas	Philadelphia, Pa.
Denver, Colo.	Portland, Ore.
Detroit, Mich.	Richmond, Va.
Helena, Mont.	St. Louis, Mo.
Houston, Texas	Salt Lake City
Jacksonville, Fla.	San Antonio, Tex.
Kansas City, Mo.	San Francisco
Little Rock, Ark.	Seattle, Wash.
Los Angeles, Cal.	Spokane, Wash.
Louisville, Ky.	

L-280-Fan and Blower Order

GENERAL Limitation Order L-280 specifies that after February 28, 1943, no manufacturer or dealer may accept any order for a fan or blower unless the order is an approved order. Also, after March 31, 1943, no manufacturer shall deliver any fan or blower in fulfillment of any order unless the order is an approved order.

The limitations and restrictions above shall not apply to any order for repair parts in an amount not exceeding \$500 for any single fan or blower or 50 per cent of the original sales price of the fan or blower to be repaired, whichever is less in any particular case. The limitations and restrictions shall not apply in any amount for the repair of a fan or blower where there has been an actual breakdown or suspension of operation because of damage, wear and tear, destructions or failure of parts, and the like, and the essential repair and maintenance parts are not otherwise available.

Order L-280 defines an improved order as:

- (1) Any order for a fan or blower bearing a preference rating of AA5 or higher.
- (2) Any order for a fan or blower which the Director General for Operations approves

pursuant to sub-paragraph B3 of the order.

Section B3 mentioned above states that a manufacturer or a dealer may apply for authorization to deliver orders on his books which are not approved orders by filing a report in duplicate on Form PD-795, together with a statement of the percentage of completion of each such order. The Director General will thereupon approve any such order regardless of the rating or may re-rate such orders in order to constitute them approved orders.

Finally, Order L-280 defines a fan or blower as any device or machine which moves, compresses or exhausts air or other gases by centrifugal, rotary or axial means, except wall-type propeller fans having a blade diameter of less than 17 inches (this permits kitchen exhaust fans to be sold, if available); ceiling air circulators and other portable window fans and pedestal-type fans of a portable nature; fans and blowers manufactured by a person solely for incorporation into other machinery or devices including pulverizers, stokers, and boilers; propeller-type fans for use as a part of internal combustion engines; critical turbo blowers as defined by Limitation Order L-163 amended.

On Our Industry's Front

PRP Interim Procedure

DETAILS of procedures to govern PRP units during the period of industry's transition from PRP to the Controlled Materials Plan in the second quarter of this year are announced in "Amendment to Priorities Regulation No. 11" and a short Supplemental Regulation No. 11A. The Supplemental Regulation No. 11A is most important.

Purpose of the transitional procedure is to assure materials to manufacturers pending their receipt of allotments under CMP, by extension into the second quarter of a basic percentage—in most cases 70 per cent—of their first quarter PRP authorizations. After March 31, but not before that date, those PRP units which have not been advised otherwise will be permitted to apply first quarter ratings to the remaining 30 per cent of their first quarter authorizations. The quantities authorized, however, will vary in some cases for particular products or industries.

Extensions of authorizations are automatic, and PRP units will not be required to submit additional PD-25A applications.

Following are important excerpts:

[Priorities Regulation 11A] PRP FOR SECOND QUARTER OF 1943

§ 944.32A *Priorities Regulation 11A*—(a) *Purpose*. The Second Quarter of 1943 is the transition period from the Production Requirements Plan to the Controlled Materials Plan. In order to insure the receipt of materials by manufacturers during the transitional period, authorizations will be made under the Production Requirements Plan and under the Controlled Materials Plan. Preference ratings will be authorized under PRP as provided herein and in addition, most manufacturers will receive allotments under the Controlled Materials Plan. It is therefore essential that the utmost care be observed by manufacturers not to duplicate their orders for materials under both authorizations, and it is the purpose of this regulation to provide priorities assistance to PRP Units during this transition period and to require reductions in PRP authorizations or CMP allotments to the extent necessary to eliminate duplication.

(6) For the purposes of this regulation, any person who is a PRP Unit as of March 31, 1943, shall continue to be deemed a PRP Unit through June 30, 1943, or until such time as he ceases entirely to operate under the Production Requirements Plan.

(c) *Assignment of ratings to production materials*. Subject to the restrictions contained in paragraph (d) of this Regulation:

(1) Each PRP Unit may apply its first quarter production material ratings to the delivery to it of not more than 40 per cent during April, 1943, nor 70 per cent during the entire second quarter of 1943 of the total amount of each listed material which was authorized on its first quarter PD-25-A certificate and on any first quarter PD-25F certificates issued prior to March 1, 1943, such percentages to be applied after deducting from such total the amount of each such material received or scheduled to be received during said first quarter for supplies.

(2) In addition, unless otherwise specifically directed by the Director General for Operations by March 31, 1943, each PRP Unit may, during the second quarter of 1943,

apply its first quarter production material ratings to deliveries in the quarter of the remaining 30 per cent of said authorized quantities of listed production materials, computed as provided in subparagraph (1) of this paragraph (c).

(3) Each PRP Unit may apply its first quarter production material ratings to the delivery during the second quarter of 1943 of production materials (including listed fabricated items) other than listed materials, but only in the quantities and at the rate necessary to maintain the production schedules permitted by the quantities of listed materials it is authorized to receive as a PRP Unit.

(4) CMP Ratings may be applied or extended as provided in CMP Regulation No. 3.

(d) *Elimination of duplications under PRP and CMP*—(1) *Controlled materials*. If a PRP Unit receives an allotment of controlled material under CMP, to the delivery of which it is authorized to apply PRP ratings under paragraph (c) of this regulation, it must reduce the ratings by the amount of such material which it obtains for its own use by means of the allotment, but need not, unless it included the requirements of secondary consumers in its first quarter PRP application, deduct the portion thereof which it allots to its secondary consumers producing Class A products for it. If, at the time of receiving its allotment, it has already received by use of the PRP rating or otherwise any or all its requirements of controlled material for the production schedule for which the allotment is made, or elects to obtain the same by PRP rating, it must reduce or cancel the allotment, as provided in paragraph (v) of CMP Regulation No. 1.

Electric Motors Wanted

WPB has issued an appeal to owners of idle electric motors of all sizes—from less than 1 hp. all the way up—to make them available for sale or rental to war producers. All users are also asked to regulate operation of their motors so that maximum use is obtained from them, and so that any motors released by such a program may be offered for sale or rental to war producers.

Stoves Under L-79 and P-84

IN localities where rationing of coal and oil heating stoves will be effective, preference ratings and limitation orders of the War Production Board will cease to be applicable to sales and deliveries of such equipment to persons who are eligible to buy stoves on OPA rationing certificates, it was announced today by the Director General for Operations.

For the purpose of establishing conformity between preference rating regulations or limitation orders of WPB and the newly announced stove rationing program of OPA, two WPB Orders have been amended.

Limitation Order L-79 as amended provides that no person may sell or deliver to an ultimate consumer any plumbing or heating equipment the transfer of which is *subject to a ration order issued by the OPA*.

Revision of L-79 revokes sub-paragraph (b) (6) which enabled a purchaser to obtain plumbing and heating equipment upon filing a signed statement cer-

New PD-1A

WAR Production Board Form PD-1A, "Application for Preference Rating," has been revised and copies of the revised form will be available in WPB field offices after March 1.

Major revisions are:

(1) Change from a column-type form, with accompanying instruction sheet, to a block-type question and answer form designed to facilitate application and to reduce to a minimum special requests for additional information; (2) incorporation of the clearance form used in processing the application to speed handling, and (3) addition of some questions not previously asked, to eliminate need for supplemental forms.

In order to allow time for full distribution of the revised form, WPB will continue to process applications filed on the old form until April 1. After this date only the revised Form PD-1A will be accepted for processing.

Two colors have been used in printing the revised PD-1A yellow to be used in applying for ratings for items which are to be exported without further processing, and white for all others.

Beginning March 1, all PD-1A applications must be filed with the nearest WPB District Office, not in Washington.

After March 15, all applications for ratings on less than \$100 worth of material will be processed in the War Production Board Regional Offices. This preliminary value limitation will be progressively stepped up as the field offices assume greater responsibilities. It is expected that within six weeks more than 80 per cent of all PD-1A applications will be handled entirely in the field.

Orders to Be Appealed Locally

ON February 17, 38 War Production Board Orders were added to the list of orders which may be appealed only to WPB field or local offices. In the same amendment, 8 orders previously on the list for local appeal were removed. None of the orders removed affect our Industry.

These changes are made effective by amendment to Schedule A of Priority Regulation No. 16. The orders which now should be appealed locally are, as follows: L-22 (Limit Construction of Iron or Steel in all warm air furnaces); L-23 (Restrict Use of Iron or Steel in Domestic Cooking Appliances, gas ranges, gas cooking stoves); L-23-a (Restrict the use of Iron and Steel in domestic cooking appliances); L-23-b (same as L-23-a); L-23-c (Restricts types of cooking appliances to be made and assigns volume to Class A and Class B manufacturers); L-29 (Restricts use of Iron and Steel in production and installation of metal signs and sign accessories); L-30-a (Prohibits use of Iron and Steel, Galvanized and non-metal coated household and kitchen ware); L-30-b (Exempts certain kitchen ware for military use); L-23-c (Simplifies kitchen and household ware); L-42 (Establishes schedules of simplification of lines of plumbing and heating equipment, including malleable iron, cast iron, brass and bronze fittings, low-pressure boilers, cast iron soil pipe, fixtures and trim, radiators, and specialty items); L-62 (Restricts use of iron and steel in metal household furniture, stops production and

regulates material transfer); L-64 (Restricts Use of Iron and Steel in caskets and vaults to 4 pounds per unit); L-64-A (Restricts type of caskets and vaults); L-74 (Restricts production of Class A and Class B oil burners); L-77 (Permits manufacture of metal windows to certain types of orders); L-79 amended (Stops transfers to other consumers of metal plumbing equipment and heating equipment); L-142 (Limits production to only essential metal doors, metal door frames, metal shutters); L-173 (Stops production of all space heating equipment except for war agencies); L-185 (Prohibits manufacture of direct-fired water heaters using gas or oil, and limits weight of metal in coal-fired heaters); L-187 (Prohibits manufacture of gas or oil, low-pressure cast iron boilers); M-11-b (Prohibits use in manufacture of List A items using zinc); M-126 (Curtails and prohibits use of specified items with governing date of such restrictions of iron and steel products).

Appeals for the relief from the restrictions imposed by the above orders must be filed with the appropriate WPB field office on Form PD-500, except for order L-22, L-42, L-74, L-79, L-142, where the appeal should be made by letter.

Appeals for many other WPB orders must be made, as in the past, directly to WPB in Washington. If no special appeal form is specified, the appeal should be made by letter in triplicate by Reference Order L-M-so and so and stating in detail the grounds for the appeal.

CMP Standard Certification

CMP Division of the War Production Board, announces that a forthcoming regulation, CMP Regulation No. 7, will provide a single standard form of certification which may be placed on any delivery order, in lieu of one or more of the other forms now required for use in varying circumstances by CMP Regulations 3, 4 and 5. The earlier forms, however, may still be used in the appropriate circumstances if a controlled materials purchaser so chooses.

CMP Regulation No. 7 will provide that any delivery order under the Controlled Materials Plan may be validated by endorsing it or accompanying the order with a certificate, in substantially the following form, signed manually or with a facsimile signature as provided in Priorities Regulation No. 7:

"The undersigned purchaser certifies, subject to the penalties of Section 35 (A) of the United States Criminal Code, to the seller and to the War Production Board, that, to the best of his knowledge and belief, the undersigned is authorized under applicable War Production Board regulations or orders to place this delivery order, to receive the item (s) ordered for the purpose for which ordered, and to use any preference rating or allotment number or symbol which the undersigned has placed on this order."

If an applicable CMP regulation requires that an allotment number or symbol, preference rating or other identification be included in a certification, it must be placed on the delivery order if the form is used.

Use of this standard form by those who wish to take advantage of it will obviate the necessity, which will otherwise arise in many cases, of placing several different certifications on a single order.

tifying that the item was necessary for the installation of specifically listed farm machinery and equipment.

Preference Rating Order P-84 as amended brings that order into conformity with the OPA rationing program by insertion of sub-paragraph (e) (1) (ii) as follows:

"No Installer or Supplier may apply the rating hereby assigned to obtain any material the transfer of which is subject to a ration order of the Office of Price Administration."

WPB Information Office

Business men seeking solution to their war production problems, now have at their disposal a unit of competently trained specialists in Washington whose job it is to answer their questions or refer them to the proper WPB officials.

The main unit, consisting of a Telephone Inquiry Service, has set up headquarters in Room 1501, Social Security building, on Independence Avenue between Third and Fourth Streets, in Washington, D. C.

Because of its location, close to the building entrance, visitors need no passes or badges. The unit is a subdivision of the Business Service Branch of the Administrative Division of WPB. In the same room WPB press releases, forms, orders and regulations are available.

The central telephone number is Republic 7500. The Telephone Service Unit has Extension 73011. The press release extension is 71411. The Industry Advisory Service can be reached through Extensions 72801, 72802, 74203, and 74231.

Separate liaison services are maintained in Room 304-A in the old House Office building and in 10-B Senate Office building. A third such office is in the Information Center, 1400 Pennsylvania Avenue.

Appeal for M-126

PART 944—REGULATIONS APPLICABLE TO THE OPERATION OF THE PRIORITIES SYSTEM.

[Priorities Regulation 16]

APPEALS

§ 944.37. *Priorities Regulation 16*—(a) *Certain appeals to be filed with field offices.* Every appeal from any order listed in Appendix A (M-126) to this regulation shall be filed with the field office of the War Production Board for the district in which is located the plant or branch of the appellant to which the appeal relates, notwithstanding any existing provision of any regulation, order or form.

(b) *Appeals forms.* Every appeal from any order listed in Appendix A to this regulation shall be filed on Form PD-500 or such other form as may be specifically designated in Appendix A, notwithstanding any existing provision of any regulation, order or form.

(c) *Other Appeals.* An appeal from any rule, regulation or order not listed in Appendix A to this regulation shall be filed with the Washington Office of the War Production Board unless the rule, regulation or order appealed from provides otherwise.

(d) *Appeal by letter.* An appeal for which no specific form is prescribed by any rule, regulation or order shall be made by filing with the appropriate office of the War Production Board a letter in tripli-

cate referring to the particular provisions appealed from and stating fully the grounds of the appeal.

This regulation shall take effect October 22, 1942.

Q. May the owner sell his property while it is leased to the Government?

A. Yes. The purchaser, however, takes it subject to the terms of the lease.

Q. Will the NHA provide furniture?

A. No. Each tenant must arrange to rent or purchase his furniture independently.

Report Your Idle Truck

ON January 15th the Office of Defense Transportation reminded owners of commercial motor vehicles that all idle trucks, busses and other vehicles, except taxicabs, rental cars, ambulances and hearses—must be reported to the Office of Defense Transportation at Washington. The report should be made on ODT form CW-N-3. This is a simple single sheet form of only eight questions which can be obtained from and should be returned to the vehicle owner's local ODT district office.

Conversion Grate Ceilings

IN THE February issue and again in this March issue, readers will find a discussion of Maximum Price Regulation No. 251 which covers the sale of conversion parts for warm air furnaces and tells how much you may charge; how you figure your sale price; how you report jobs over \$500; and what you do for jobs under \$500.

The contractor who, therefore, is called in to install a set of conversion grates in a warm air furnace burning oil, must price his parts and labor according to MPR 251 as described.

But for the contractor who also does work on boilers, there is a completely different method of pricing. This is outlined in detail in Service Trades Bulletin No. 5, issued by Retail Trade and Services Division of OPA. Any contractor who sells parts or conversion grates for boilers should have a copy of this bulletin and also the "Supplement," dated February 11, which lists all the conversion grates registered with OPA and publishes the prices installed for each make of grate.

Ceiling on Firepots

ALL sales of mechanic's firepots and blow torches are subject to the provisions of Maximum Price Regulation No. 188 (Manufacturer's Maximum Prices For Specified Building Materials and Consumer's Goods Other Than Apparel), ARTISAN, August, 1942, page 25, the Office of Price Administration announces in order to correct an impression that these items are covered by the price regulation for machinery.

Some sellers, OPA said, have been in error in pricing the tools under the provisions of Maximum Price Regulation No. 136 (Machines and Parts and Machinery Services), ARTISAN, December, 1942, page 72.

NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION



Says



COMMENCING with this the March issue of *AMERICAN ARTISAN*, one page each month has been offered to the National Warm Air Heating and Air Conditioning Association. For this we of the Association are grateful and we hope that the contents of the forthcoming issues will be of interest and assistance to the industry as a whole.

In these days of war, while we are doing our utmost to assist our government and at the same time keep ourselves in business, we naturally are looking ahead to the day when the war will be over and we will again be living in peace. We are all agreed that the post war period offers a magnitude of heating business never before dreamed of within our industry. Not only will there be a tremendous amount of new home building, but the replacement market has never been as great as that which we will face after this war. Many writers on the subject of post war building offer their ideas as to this new building market. Many of them agree that a new type of home will be popular which will require new types of heating equipment. Just what this market will be and to what extent changes in heating equipment will be we do not know. It seems to me, however, that our Association, representing as it does the majority of production in the warm air and winter air conditioning field, can and will be of valuable assistance to its members and the industry as a whole.

It is expected that in future association pages the various committees of the association will report their activities. I am sure that reports from those listed below will be interesting and helpful.

Mr. Fred G. Sedgwick, Chairman of the Research Advisory Committee.

Mr. Paul Zimmerman, Chairman of Publicity and Merchandising Committee.

Mr. W. D. Redrup, Chairman of Codes Committee.

Prof. Lorin G. Miller, Chairman of Michigan State College Short Course Committee.

These gentlemen give generously of their time in behalf of the association and its members and will from time to time be able to report in this column interesting items pertaining to the activities of their committees. They deserve a sincere "thank you" for the fine work they are doing for the benefit of our membership. I expect that Mr. George Boeddener, Managing Director, will from time to time report progress in Washington.

This Association is practically thirty years old. All during these years it has grown in value to its membership. Now, I am sure, with the post

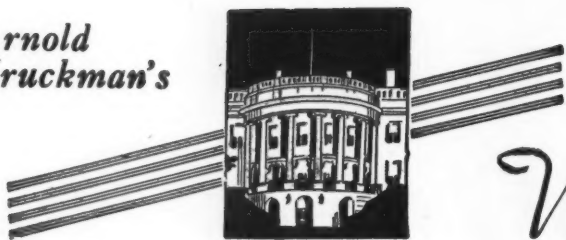
war period facing us, it is even more valuable than heretofore. It is gratifying to note that in these strenuous times the vast majority of members continue their membership in the association, and I am sure they do so because they are well aware of the value of the association in the conduct of their business. George Boeddener, through his Washington contacts, has been most helpful to the membership by keeping them informed as to details in connection with Limitation Orders, Priorities, etc. He has also been able to inform those in authority in Washington as to the many situations facing our industry, resulting in a clearer understanding of the industry's position in the many matters pertaining to the production and sales of furnaces in war times.

Last December at the convention held in Cleveland we celebrated our 25th Anniversary of Research, at which time it was announced that Mr. Allen W. Williams, Managing Director Emeritus, was preparing a History of The National Warm Air Heating and Air Conditioning Association. Mr. Williams was on our program and explained to those present some of the important milestones in our history. This history will be printed in *AMERICAN ARTISAN* in sections starting in an early issue. This should prove interesting and instructive and will provide a background such as is not enjoyed by very many other industries.

Few of us in the warm air heating industry realize that ours is one of the very few industries, regardless of size, which has persistently, over a period of 25 years, conducted a technical research program such as we have in cooperation with the University of Illinois. The reason why we do not realize it is because we are so closely connected with the industry's activities. But one thought we all have in common, I am sure, is that this quarter of a century Technical Research program has lifted our industry out of the pit of confusion and misunderstanding and placed it in a position where apologies for lack of proper engineering knowledge is no longer necessary. Most manufacturers, jobbers, dealers and distributors have taken advantage of the scientific knowledge which has been made available because of the Research Program, with the result that our industry has in recent years gained markets which had previously been closed to it.

We will welcome any suggestions from anyone in the industry on topics for future issues. These should be sent to our office in the Society for Savings Building, Cleveland, Ohio.

H. S. SHARP, President.



Washington Letter

The Situation Facing "Small Business"

THERE are three broad, clearly defined trends essential to understand in order to grasp what is happening to your industry and why it is happening.

The Army and the Navy and those directly involved in making active war, logically regard this as a Total War, and they naturally and sincerely feel there should be complete and total regimentation for the duration. Total regimentation patently spells we must quit all business and work that does not bear directly on the job of making War.

The second trend is a modified blend of the foregoing. Those who go along with the sweep of this trend would make it a total war so far as the fighting forces are concerned, and would make our economy a totally controlled system; but they would keep a wall between the military and civil, and keep the military subordinate to the civil in all things except the actual business of fighting.

The third trend is the feeling that the Armed Services, as in the past, should occupy a pigeonhole made strictly for the fighting forces, and that we should have a distinct war economy used specifically to make the things and supply the services that will keep the fighters battling; and that we should also have a separate civilian economy for civilians to maintain a civil society and to preserve our socio-economy as it has existed before this new collectivist philosophy swept the world.

Issue Still Confused

There is obviously a lack of clear thinking about these trends, where the trends may be given ultimate direction. James Byrnes, who with Mrs. Roosevelt and Harry Hopkins, is given credit for more influence on trends than is presently exerted from any other quarter, has not yet made his position entirely clear. He is called the Richelieu of the Administration, and he undoubtedly is drawing all the strings of control towards the White House. Donald Nelson has made it very clear that he wishes to create a highly controlled civil economy, and that he also does not wish this controlled economy to be subordinate to the armed forces. He fired Eberstadt as an earnest of his opposition to a total military control, and he is now apparently supported by those (who do not entirely go along with him in all his rather hazy plans) because they approve of his resistance to the military.

The third trend is perhaps best represented by Joseph Weiner, who heads the Office of Civilian Supply. His school holds we should have an Office Civilian Supply entirely independent of all other government agencies. But within this school you

have subdivisions. Organized labor definitely is opposed to an army of 10,000,000; but on the other hand labor also appears to have very little sympathy for Smaller Business. The curious aspect is that this school seems to be in tacit agreement upon this subject with the Navy, some elements in the Administration, and logically with big business itself. By and large you find little real sympathy anywhere, except in Congress and in the Army, for Smaller Business; but you find a strong general sentiment in many quarters for an independent Office of Civilian Supply or Division of Civilian Economy. And usually you find the corollary sentiment that the economy should be controlled.

"Socialism" Vs. "Business-as-Usual"

There again you run into a division. The radicals would have a control for social objectives, while the realists would exercise the control with sincere faith in the fact that the principle of mass production and ordered distribution must ultimately be the most profitable economy. Each group naturally has the post-war world in mind, and each group probably is tacitly working with the other now, leaving to the future the determination of the left or the right road.

Meanwhile, those who still hold fast to the essential faith of pre-1914 Democracy, which includes the idea that every man has the right to be his own boss—the very essence of smaller business—this rather archaic group go along with the third trend heretofore described. They feel the ordinary life of the communities of the nation should be preserved, even if under limitations; and that the civil economy should be maintained, even with restrictions; and that smaller business is entitled to life and being both as the supplier of more abundant civil needs than are now possible, and as a supplier of some war goods.

An "Allocation" For Essential Business

This school staunchly holds to the proposal made by Odlum when he briefly headed the smaller business unit in WPB that somewhere between 2% and 6% of almost any raw material must be allocated to the needs of civil life and the preservation of smaller business, over and above all allocations for near-war and war products. There is a strongly growing sentiment here that Odlum had the answer. And there is a strongly growing sentiment in the same quarters that Odlum's answer was not wanted, no matter how sound it was, and still is not wanted, by those elements which have given much lip-serv-

ice to the troubles of smaller business, but have done virtually nothing for it in all these months.

Rep. Patman, of the House Committee for Smaller Business, says these elements appear to be completely in agreement upon one aspect of the smaller business problem, that the squeeze or concentration or extermination tragically serves the purpose of preparing for the happy day which will come with peace when the newly organized controlled economy makes more of the good things available to those who have hitherto not had them, and gives some of the profits of industry to the workers who make the products.

Murray Report Sets Foundation

Sen. Murray, Chairman of the Senate Small Business Committee, recently published a report which contains some striking passages. He says:

"For several decades we have been facing a national trend toward centralization of American business and industry . . . Small business is fundamental to our system of free competitive enterprise and the trend we have been following would eventually lead our country to a complete abandonment of free enterprise and the building in its place of a totalitarian system like that of Germany . . . The basis of free competitive enterprise has been practically suspended by the exigencies of war . . . We must find some means to sustain the structure of small business or there will remain no suitable framework upon which a free economy can again be established . . . Since any victory of arms which does not sustain the American way of life is an empty victory, this Committee feels no question confronting the Seventy-eighth Congress is more deserving of constructive attention than the problems of American small business.

"The war has conjured up a grim paradox: The existence of idle factories and idle machines at a time when the survival of this country depends largely upon speedier manufacture of planes, tanks, ships, guns, and other weapons . . . These idle factories and these idle machines are owned by smaller independent businessmen who have been unable to obtain enough war contracts from procurement agencies. Over 70% of all prime contracts are still in the hands of 100 of the large companies which enjoyed only a small percentage of our total peacetime production. Subcontracting has proceeded at a snail's pace. The procurement agencies have pursued the general policy of meeting the need for additional facilities through a program of building new factories and obtaining new machinery before using to the utmost the existing facilities of the country.

"This paradox presents America with a problem of profound implications both for us and for generations to come. If we allow productive machinery to lie idle in time of war, we are thereby subtracting from the total amount of war weapons that can be produced. If we allow the concentration of war contracts to continue in the hands of a few large corporations, we are thereby tolerating the continuance of many production bottlenecks and of acute shortages of manpower, power, transportation, and housing that have developed in the communities where these large companies are located.

"The hand that signs the war contract is the hand that shapes the future. It will take forthright measures to prevent the pattern of concentration developed in war production from becoming

the pattern of concentration for all manufacturing after the war.

"There is no justification for any large company or any procurement officer to use the war as an excuse to help to build the new industrial America along totalitarian lines.

"How can smaller plants best be utilized in areas of acute labor shortage?

"Our supply of strategic and critical materials sets a definite ceiling not only upon the amount of munitions produced in this country but upon the number of smaller plants that can effectively be used in war or essential civilian work . . . Thousands of smaller mine operators have thus far been unable to participate effectively in the production of critical and strategic materials. WPB has failed to take action looking toward the expansion of production of essential materials. We have an over expansion of factories and underexpansion of the mines needed to produce the materials required by the factories.

"There has been a definite tardiness on the part of the WPB and other agencies on the entire civilian production front. Essential civilian requirements have not yet been determined. It has been impossible to determine the amount of labor or materials needed in producing essential goods and services. Not until these requirements are fully set forth, and the decision has been made to guarantee the meeting of these requirements, can a sound approach be made to the question of using small business effectively in meeting essential civilian needs.

"We find many controls without any well-formulated or widely-accepted policy on civilian supply.

"There is no one agency or official with clear-cut responsibility of determining our essential civilian requirements and seeing they are met . . . The entire picture appears to be a chaotic one, and the Committee intends to investigate thoroughly.

"Government decisions now determine the direction of business life. These decisions are themselves made and administered on an uncoordinated basis by a multitude of conflicting and duplicating agencies. Under circumstances such as this, even big business often fails to understand what is going on, and small business seldom fails to get the run-around.

"Our vast country cannot be administered by 'directives' from Washington, D. C., or by any group of people, no matter how well-intentioned, who sit behind closed doors and neglect to take the people into their councils. Every smaller business man knows that the Government must be taken to the people and the people to the Government.

"The people must be brought nearer to the Government. Small business, especially, through its various organizations and through local and National Advisory committees to Federal agencies, should be given full opportunity to assist in the planning and administration of public policy where their rights and interests are affected."

We Should Support Murray Report

This statement, like other reports of the Murray Committee and the Truman Committee, has profoundly shaken WPB, OPA, and other agencies. The final effect depends much upon your reaction. Congress is the best friend you have in Government.

(Continued on page 78)

The Labor Situation

Not strictly sheet metal labor, of course, but all skilled labor. But we know, now, that as all skilled labor goes so goes our labor—either into war plants, or into war plant construction or to competitors willing to pay a higher rate because a job is behind schedule. You can use this schedule in planning future operations.

EIGHTY-FIVE industrial areas have been tentatively designated by the War Manpower Commission as plentiful labor areas, "areas in which all possible effort should be made to renew contracts, place new contracts, and locate new production facilities."

These areas were listed in Group IV of a revised classification issued for guidance of WPB and Government procurement agencies in placing war contracts with consideration for manpower factors.

Group IV is further defined as including "all areas in which available labor supply is not fully utilized on essential civilian or war production or in which a substantial surplus of workers exists."

Areas have now been reclassified into four groups: Group I, areas of current acute labor shortage; Group II, areas of current balance of labor supply and demand; Group III, areas of anticipated balance of labor supply and demand, in six months, with presently adequate labor supply; and Group IV, areas of labor surplus.

Each labor market area is listed under the name of one city. The area includes not only the city named, but also takes in nearby communities which should be grouped together as a natural area. For example, the listing of Moline, Ill., represents a group of four cities known as the "Quad Cities" area, which includes Moline and East Moline, Ill., Davenport, Iowa, and Rock Island, Ill.

Group I

(Acute Labor Shortage)

Alabama: Mobile.
California: San Diego.
Connecticut: Bridgeport, Hartford, New Britain, Waterbury.
District of Columbia: Washington.
Florida: Panama City.
Georgia: Brunswick, Macon.
Kansas: Wichita.
Maryland: Baltimore, Elkton.
Massachusetts: Springfield.
Michigan: Detroit.
Mississippi: Pascagoula.
Nevada: Las Vegas.
New York: Buffalo.
North Carolina: Elizabeth City.
Ohio: Akron, Dayton.
Oregon: Portland.
Rhode Island: Newport.

South Carolina: Charleston.
Utah: Ogden.
Virginia: Hampton Roads.
Washington: Seattle.
Wisconsin: Manitowoc, Sturgeon Bay.
Wyoming: Cheyenne.

Group II

(Balanced Supply)

Alabama: Huntsville, Talladega.
Arizona: Phoenix.
Arkansas: Pine Bluff.
California: San Bernardino, San Francisco, Stockton.
Colorado: Pueblo.
Connecticut: Meridan, New Haven, New London, Stamford.
Delaware: Wilmington.
Florida: Tampa.
Georgia: Savannah.
Idaho: Pocatello.
Illinois: Joliet, Moline, Springfield, Sterling.
Indiana: Evansville, Gary, Michigan City, Terre Haute.
Iowa: Burlington.
Kansas: Parsons.
Kentucky: Louisville.
Maine: Bath, Portland.
Maryland: Hagerstown.
Massachusetts: Brockton, Greenfield, New Bedford, Pittsfield.
Michigan: Adrian, Battle Creek, Benton Harbor, Flint, Jackson, Lansing, Muskegon, Pontiac, Saginaw.
New Hampshire: Claremont, Portsmouth.
New Jersey: Jersey City, Long Branch, Morristown, Newark, Paterson, Perth Amboy, Trenton.
New York: Albany, Elmira, Rochester, Utica.
Nebraska: Grand Island.
North Carolina: Wilmington.
Ohio: Canton, Cleveland, Columbus, Fremont, Hamilton, Lima, Lorain, Marion, Piqua, Sandusky, Warren.
Oklahoma: Chateau, McAlester.
Pennsylvania: Aliquippa, Allentown, Berwick, Erie, Harrisburg, Lancaster, Lebanon, New Castle, Philadelphia, Pittsburgh, Pottstown-Reading, Washington, Williamsport, York.
Tennessee: Bristol.
Texas: Beaumont, Dallas, Texarkana.
Utah: Provo, Salt Lake City.
Washington: Everett, Spokane.
West Virginia: Point Pleasant.
Wisconsin: Milwaukee.

Group III

(Anticipated Balance)

Alabama: Florence.
California: Fresno, Los Angeles, San Jose.
(Continued on Page 83)

The 48-Hour Week Order

AS this March issue goes to press, the assumption is that *not* all industries in the critical labor areas will be placed automatically under the 48-hour week executive order and, perhaps, not *all* employees within an office or factory in the area will have to comply with the order.

It is *presumed* that small businesses employing fewer than eight persons (remember, this includes office help) will be exempt from the order.

At this writing, OPA takes the stand that overtime payments for work in excess of 40 hours a week cannot constitute a justification for general price increases in the product or service sold.

Following is the official executive order and following that the latest declaration of Manpower Commission.

Executive Order

"By virtue of the authority vested in me by the Constitution and statutes, as President of the United States, and in order to meet the manpower requirements of our armed forces and our expanding war production program by a fuller utilization of our available manpower, it is hereby ordered:

"1. For the duration of the war, no plant, factory or other place of employment shall be deemed to be making the most effective utilization of its manpower if the minimum workweek therein is less than 48 hours per week.

"2. All departments and agencies of the Federal Government shall require their contractors to comply with the minimum workweek prescribed in this order and with policies, directives, and regulations prescribed hereunder, and shall promptly take such action as may be necessary for that purpose.

"3. The Chairman of the War Manpower Commission shall determine all questions of interpretation and application arising under this order and shall formulate and issue such policies, directives, and regulations as he determines to be necessary to carry out this order and to effectuate its purposes. The Chairman of the War Manpower Commission is authorized to establish a minimum workweek greater or less than that established in section 1 of this order or take other action with respect to any case or type of case in which he determines that such different minimum workweek or other action would more effectively contribute to the war effort and promote the purposes of this order.

"4. All departments and agencies of the Federal Government shall comply with such policies, directives, and regulations as the Chairman of the War Manpower Commission shall prescribe pursuant to this order, and shall so utilize their facilities, services, and personnel, and take such action under authority vested in them by law, as the Chairman determines to be necessary to effectuate the purposes of this order and promote compliance with its provisions.

"5. Nothing in this order shall be construed as superseding or in conflict with any Federal, State or local law limiting hours of work or with the provisions of any individual or collective bargaining agreement with respect to rates of pay for hours worked in excess of the agreed or customary workweek, nor shall this order be construed as suspending

or modifying any provision of the Fair Labor Standards Act (Act of June 25, 1938; 52 Stat. 1060; 29 U.S.C. 201 et seq.) or any other Federal, State or local law relating to the payment of wages or overtime.

"FRANKLIN D. ROOSEVELT."

THE WHITE HOUSE,

February 9, 1943.

Manpower Commission Statement

1. The purpose of Executive Order is to make more manpower available as needed and to increase production. It is imperative that this be done in an orderly manner.

2. Until further notice the Executive Order and the following principles will apply to the following labor shortage areas only. (Towns nearabouts are included these cities as areas):

Bath, Maine.	Manitowoc, Wis.
Bridgeport, Conn.	Sterling, Ill.
Hartford, Conn.	Brunswick, Ga.
New Britain Conn.	Charleston, S. C.
Portsmouth, N. H.	Macon, Ga.
Springfield, Mass.	Mobile, Ala.
Waterbury, Conn.	Panama City, Fla.
Buffalo, N. Y.	Pascagoula, Miss.
Somerville, N. J.	Wichita, Kans.
Baltimore, Md.	Beaumont, Tex.
Elkton, Md.	Cheyenne, Wyo.
Hampton Roads, Va.	Ogden, Utah.
Washington, D. C.	Las Vegas, Nev.
Akron, Ohio.	Portland, Ore.
Dayton, Ohio.	San Diego, Calif.
Detroit, Mich.	Seattle, Wash.

3. In those areas it applies to all employment.

4. Those establishments in which the minimum work week is less than 48 hours are to stop recruiting at once unless they can go to a 48-hour week without need for releasing workers or due to expansion or production schedule still need more workers.

5. They will go on a 48-hour week in such a manner as will assure orderly absorption of surplus workers by absorption or transfer within the employers' operations.

6. No employer should prior to March 31 release workers for the purpose of attaining the 48 hour week. If by March 31, 1943, an employer has not attained a 48-hour week without the need for releasing workers for other employment, he will advise the areas representative of the War Manpower Commission of what number need be released to attain a 48-hour week. The employer will at that time present a proposed schedule for release of workers or for further absorption within his own plant in order to attain the 48-hour week. The area director will then authorize a proper schedule of release or absorption in terms of the local labor market needs.

7. In cases where employers have not attained a 48-hour week by March 31, 1943, due to shortage of materials or other special circumstances beyond their control, their cases will be reviewed at that time by the War Manpower Commission area representative and provision will be made for proper adjustments.

8. This order is not intended to interfere with work schedules designed to utilize workers who on account of other activities or limitations are available for part time work only.

Definite plans for controlling hiring and shifting of labor are, as of March 1, still in the formative stage, but WMC has stated that the following is a basic policy:

All areas likely will observe the following hiring policies:

1. Workers are to be referred to jobs which will utilize their skills most effectively in the war effort;
2. Priority in referring workers shall be given to employers engaged in essential activities, in the order of the urgency of their activities, provided their labor needs cannot be met by more effective utilization of workers already employed in their plants;
3. A worker whose present or most recent job has been in an essential activity can be hired only for work in another essential activity, and then only when the worker has a statement of availability from his latest employer or from the War Manpower Commission.

4. Hiring and referral of workers shall be based on occupational qualifications essential for the performance of the job and without discrimination on account of race, color, creed, sex, or national origin, except as required by laws relating to citizenship.

5. Insofar as it will not interfere with the effective prosecution of the war effort, no worker will be required to accept or keep a job which is not suitable, and no employer will be required to retain a worker who is incompetent or who fails to conform to reasonable shop rules or standards of conduct.

The policy suggests that very small firms—manufacturing firms with less than eight employees and non-manufacturing with less than 25—should be excluded from the operation of controlled hiring plans. Domestic service and casual employment are specifically excluded except where local circumstances require inclusion of some types of casual work.

First Release Questions and Answers

Q. Does the order apply to everyone in the 32 areas?

A. To all full-time employment. If you don't employ anyone but yourself, it doesn't apply. Such persons, however, have an obligation to their country and themselves to contribute to the extent of their ability.

Q. How about part-time workers?

A. It doesn't apply. Here, however, both employer and employee have the same obligation to produce as much as they can for the war.

Q. Should firms in other areas try to go on the 48-hour week?

A. Yes, if by doing so they can reduce their labor requirements and not have to discharge workers now on their payroll. Most war plants in all areas are expanding their work-weeks, so as to utilize available labor better. Non-war plants would be well advised to plan similar action, in view of the drain of their workers into the armed forces, and into war industries.

Q. Must time and one-half be paid for all time over 40 hours in any and all employment?

A. Yes, with certain exceptions. The President's order provides expressly that no change is made by it in any collective bargaining agreement as to the rate of overtime pay. The order, of course, abrogates labor contracts which restrict the work-week to less than 48 hours, in the areas to which the mandatory order is applied.

Q. Should a store or office now working employees less than 48 hours go up to 48 hours at once?

A. Yes, but only if going to 48 hours would result in more effective use of employees, or if it would avert employment of additional employees. However, the purpose of the order is to release workers for war and essential jobs. Mere increase of hours that will not result in this was not intended.

Q. When is the order effective?

A. The President's order is effective immediately in the 32 areas designated by WMC Chairman Mc-

Nutt, and workers should be paid overtime rates as overtime is instituted. However, the War Manpower Commission has announced that employers have until March 31 to bring their work week up to 48 hours, or to report how much longer it will take them to do so, in these critical areas.

Q. Does the order apply to establishments whose hours are limited by state law—bars in most states, for instance?

A. No. The Executive order says "nothing in this order shall be construed as superseding or in conflict with any Federal, State or local law limiting hours of work."

Q. With whom should local plant, union, and employer problems, created by the order, be taken up?

A. With area or regional officials of the War Manpower Commission. The WMC intends to decentralize administration of the order as much as possible, leaving decisions in the hands of local WMC officials and their Management-Labor committees.

Q. Will OPA permit prices to be raised on a showing of increased costs?

A. That is governed by OPA regulations, but it is unlikely that the increased labor cost will add more than a small fraction to the cost of production.

Q. Does the order apply to retail stores?

A. Yes, in the critical areas. But it should be emphasized that the purpose of the order is to economize on manpower, and not to increase hours of work where it will not contribute to the war.

Q. What about little one-man business and professional people like doctors and dentists?

A. The order applies only to employment, and self-employed persons are not regarded as employees.

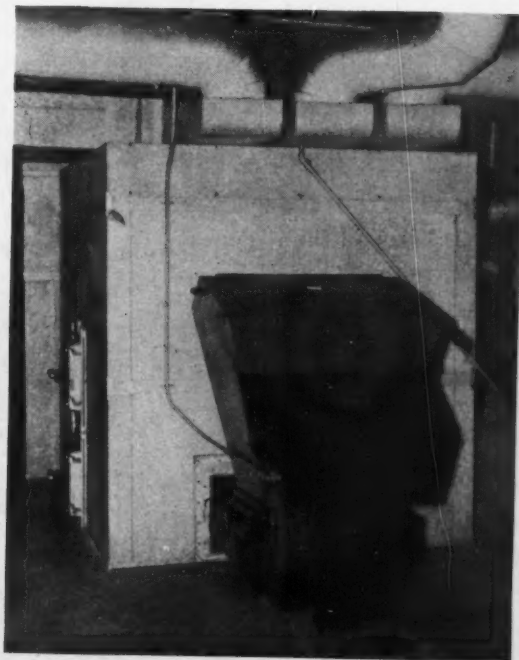
Q. Could an employer get away with paying a worker straight-time for pay over 40 hours?

A. If the worker is covered by the Wage-Hour Act, the employer would be violating Federal law. If the worker is not covered, he would be likely to leave his job for employment with an employer who is paying time and one-half.

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING

S E C T I O N



DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING



Yes, we have no Crystal Ball!

• According to the crystal gazers the post-war period will bring revolutionary changes that will completely upset our normal way of life. *Maybe so.*

In the heating field for instance, in their trance they see radical new ideas in equipment for heating and air conditioning that will relegate all of the industry's pre-war equipment to the junk pile. *Maybe so.*

Maybe we overlooked a bet in not equipping our engineering department with a crystal ball. But there are a few things we do know. We know, for instance, that after the war people are going to continue getting cold in winter and too warm in summer. Therefore they are going to keep on needing equipment of some kind that will keep them comfortable the year around.

Frankly, at this stage, we can't foretell the exact type and shape and size of the equipment that will be demanded. Our guess is that, outside of certain important improvements and new features which time always naturally develops, the post-war heating and air conditioning units—for a little while at least—will not be unrecognizably different from what we have right now. In other words, while changes are bound to come in the course of evolution, we do not believe they will come so suddenly as to knock the whole industry for a loop overnight.

Maybe we're wrong. In any event, we've got our eye on the ball (not crystal) and when the time comes you'll find RYBOLT ready with the kind of up-to-date heating and air-conditioning units that will completely meet the needs of your customers.

**Save or Slave—
Buy War Bonds**



THE RYBOLT HEATER COMPANY
615 MILLER STREET ★ ASHLAND, OHIO

Unit No. . .

(a) Comm
Intern
Extern

(b) Intern

(c) Equiva
un

(d) Leader

(e) Registe
Floor .
Basebo
Sidewal

*Selec
3/4 inch from
†Carr
stacks of sa
‡Selec

Unit No. . .

(a) Comm

(b) Stack a

(c) Require

(d) Require

(e) Capacit

(f) Comm

(g) Require

(h) Comm

(i) Actual

(j) Ratio of

Notes:

(a) S

(c) R

(e) C

(h) S

(i) O

75 per cent

(j) F

area to req

Simplified—but better—Gravity Systems

This is the second of several articles reprinted from University of Illinois, Engineering Experiment Station Bulletin No. 45. The new simplified gravity system proposes seven changes from the Standard Gravity Code—(1) leader pipe size in Btu, not sq. in.; (2) a unit piping system; (3) consideration of long leaders plus several elbows; (4) fewer pipe pieces; (5) furnace rated in Btu delivery at the register; (6) five good return systems; (7) 16, not 100, return air grille sizes.

CARRYING Capacities for Double-Wall Stacks and Fittings.—A survey of double-wall stacks commercially available indicated that the four sizes listed in Table 7 were currently carried in stock. The tests (Univ. of Ill. Eng. Exp. Sta. Bul. 141, p. 115) made in connection with the

TABLE 7
CARRYING CAPACITIES OF SECOND-STORY COMBINATION
UNITS (DOUBLE-WALL)

Unit No.	21	22	23	24
(a) Commercial stack size, in.				
Internal.....	2 1/4" x 10	3 x 10	2 1/4" x 12	3 x 12
External.....	3 1/4" x 10 3/4	3 1/4" x 10 3/4	3 1/4" x 12 3/4	3 1/4" x 12 3/4
(b) Internal stack area, sq. in.	25.0	30.0	30.0	36.0
(c) Equivalent capacity of single-wall units.	0.83 (Unit 11)	Unit 11	0.83 (Unit 12)	Unit 12
(d) Leader pipe diameter, in.	8	8	9	9
(e) Register sizes, in.				
Floor.....	8 x 10	8 x 10	8 x 12	8 x 12
Baseboard.....	10 x 8	10 x 8	12 x 8	12 x 8
Sidewall.....	10 x 8	10 x 8	12 x 8	12 x 8

*Selected as standard sizes in consultation with fittings manufacturers. Commercial sizes vary 1/4 inch from values shown.
†Carrying capacity of double wall stacks is approximately 4 per cent greater than single wall stacks of same internal area.
‡Selected as standard sizes in consultation with register manufacturers.

comparative performance of single-wall and double-wall stacks and fittings indicated that the carrying capacity of double-wall stacks was only about 4 per cent greater than that of single-wall stacks having the same internal area. Hence, for practical purposes, the carrying capacities of Units Nos. 22 and 24 (Table 7) were made the

TABLE 6
CARRYING CAPACITIES OF SECOND-STORY COMBINATION
UNITS (SINGLE-WALL)

Unit No.	11	12	13	14	15	16
(a) Commercial stack size, in.	10 x 3 1/4	12 x 3 1/4	13 x 3 1/4	14 x 3 1/4	12 x 5 1/4	14 x 5 1/4
(b) Stack area, sq. in.	32.5	39.0	42.2	45.5	63.0	73.5
(c) Required leader area, sq. in.	46.4	55.7	60.4	65.0	90.0	105.0
(d) Required leader dia., in.	7.7	8.4	8.8	9.1	10.7	11.6
(e) Capacity, B.t.u. per hr.	7 900	9 470	10 260	11 050	15 300	17 850
(f) Commercial leader size to use, dia., in.	8	9	9	10	12	12
(g) Required register free area, sq. in.	46.4	55.7	60.4	65.0	90.0	105.0
(h) Commercial baseboard register size, in.	10 x 8	12 x 8	12 x 8	12 x 8	12 x 10	13 x 11
(i) Actual register free area, sq. in.	55.0	66.5	66.5	66.5	84.0	100.8
(j) Ratio of free areas: actual/required	1.19	1.20	1.10	1.02	0.94	0.97

Notes:

- Sizes designated as standard by fittings manufacturers.
- Required leader area = $\frac{\text{stack area}}{0.7}$
- Capacity, B.t.u. per hr. = required leader area \times 170.
- Sizes designated as standard by register manufacturers.
- Opening sizes assumed as 1/4 in. less than listed register sizes. Free area assumed equal to 75 per cent of the opening area.
- From Fig. 2 no reduction in capacity was effected by the register for ratios of actual free area to required area greater than 0.9.

same as those of Units Nos. 11 and 12 (Table 6), respectively. Units No. 21 and 23 had average internal cross-sectional areas 0.83 of those for Units Nos. 11 and 12, respectively, and the carrying capacities were correspondingly made only 0.83 as great. The leader pipe and register sizes for combination units having the double-wall stacks and fittings were made to correspond to those given in Table 6 for those having single-wall stacks and fittings.

8. Corrections for Lengths of Leaders Other Than 8 Ft. in Length.—The carrying capacities, presented in Sections 5, 6, and 7, were based on data obtained in connection with 8 ft. runs of leader pipe. The carrying capacities presented in Table 1 for first-story registers and in Table 6

TABLE 8
CORRECTION FACTORS FOR LEADER LENGTHS OTHER THAN 8 FEET

Lengths of Leader, in feet	Correction Factor	Lengths of Leader, in feet	Correction Factor
4.....	1.06	16.....	0.88
6.....	1.03	18.....	0.85
8.....	1.00	20.....	0.82
10.....	0.97	22.....	0.79
12.....	0.94	24.....	0.76
14.....	0.91		

for second-story registers are, therefore, subject to correction in case leader lengths other than 8 ft. are used. Tests reported in Bulletin 188 made to determine the effect of leader lengths on carrying capacities indicated "that heating effect varies inversely with leader-pipe length for a constant heat input. The amount of the loss in heating effect is approximately 1.5 per cent per foot of length." Correction factors conforming with the test results are shown in Table 8, and the summary tables of carrying capacities presented

TABLE 9
CORRECTION FACTORS FOR 90-DEGREE ELBOWS IN THE LEADER PIPE

Number of Elbows in Leader Pipe*	Correction Factor	
	First Story Register	Second Story Register
1.....	1.00	1.00
2.....	0.967	0.95
3.....	0.934	0.90
4.....	0.90	0.85
5.....	0.87	0.80

*Including the 90-degree elbow in the boot connection. In the case of the end boot, include two additional elbows, as per discussion in Section 6, Appendix C.

in Appendix A were derived with the aid of these correction factors.

9. *Corrections for Elbows in Leader Pipes.*—The carrying capacities shown in Table 1 for first-story registers and in Table 6 for second-story registers apply only to combination units having one 90-degree elbow at the boot connection. Tests (Univ. of Ill. Eng. Exp. Sta. Bul 188, pp. 56-62) made to determine the effect on carrying capacity of using five 90-degree elbows (including the elbow at the boot) indicated that "an elbow in a pipe (in addition to the elbow at the boot) to a second-story register causes a reduction in heating effect of 4.9 per cent as compared with the same pipe without an (additional) elbow. The effect of one elbow in a first-story pipe would be to cause a reduction in heating of 3.3 per cent." Correction factors conforming with the test results are shown in Table 9, and the summary tables presented in Appendix A were derived with the aid of correction factors. Footnotes shown in connection with Tables 13 and 14 give the assumptions that were made to insure uniformity in the application of the tables.

TABLE 10
EQUIVALENT LENGTH OF ELBOWS

Type	Inner Corner	Equivalent Length in Pipe Diameters
90-deg.....	sharp	42
45-deg.....	sharp	22
90-deg.....	round	11
45-deg.....	round	6
Box between grilles and lined joints.....	sharp	22

III. Equivalent Carrying Capacities of Return-Air Ducts

10. *Tests Showing Effect of Resistance on Capacities.*—Extensive tests conducted both in the laboratory and in the Research Residence have indicated that

"Friction and turbulence in elaborate return duct systems retard the flow of air, and may seriously reduce furnace efficiency and lessen the advantage of such a design. The cross-sectional duct area is not the only measure of effectiveness. Friction and turbulence may operate to make the air flow out of all proportion to the duct areas."

Five of the six return duct arrangements which were tested in the Research Residence are shown in plan in Fig. 4 and in elevation in Fig. 5. In addition, the two laboratory arrangements designated by L-1 and L-2 are included in Fig. 5. The tests indicated that with a given arrangement of warm-air ducts, the capacity of the system as a whole was influenced by the resistance imposed by the return ducts. Since the return duct is always used in series with the rest of the system, it carries the same weight of air as the warm-air side, and an equivalent carrying capacity for the duct as used in connection with a characteristic system, expressed in terms of B.t.u. serviced per sq. in. of return duct per hour, may be derived for each duct arrangement. This equivalent carrying capacity amounted to approximately 144 B.t.u. per hour per sq. in. of return duct for the

arrangement with the shortest, most streamlined approach to the furnace casing, and was considerably less than 144 B.t.u. per hour per sq. in. for longer and more tortuous arrangements of ducts. The effectiveness of each return duct arrangement, expressed as the ratio of the equivalent carrying capacity with the given arrangement to the maximum equivalent carrying capacity obtained with the best arrangement, is designated as the effectiveness ratio, and has been tabulated in the last column of Fig. 5.

The general relation between duct resistance and effectiveness ratio is presented in the curve of Fig. 6. The duct resistance has been expressed in terms of the resistance of a length in feet of duct having the same size as that connected to the return-air shoe, and which would be required to give the same resistance as that given by the actual return-air duct system. This has been defined as the equivalent length. In calculating the equivalent lengths of ducts, the values given in Table 10 were used for the equivalent lengths of elbows. In the cases of the multiple duct systems, R-3, R-4, and R-5, the equivalent lengths of each of the three separate ducts were obtained, and the equivalent length of a single duct equal in carrying capacity to the three separate ducts was calculated by the method given in Appendix B.

11. *Equivalent Carrying Capacity of Five Typical Return-Air Duct Arrangements.*—The average curve shown in Fig. 6 indicated that the effectiveness ratio of the return duct system was

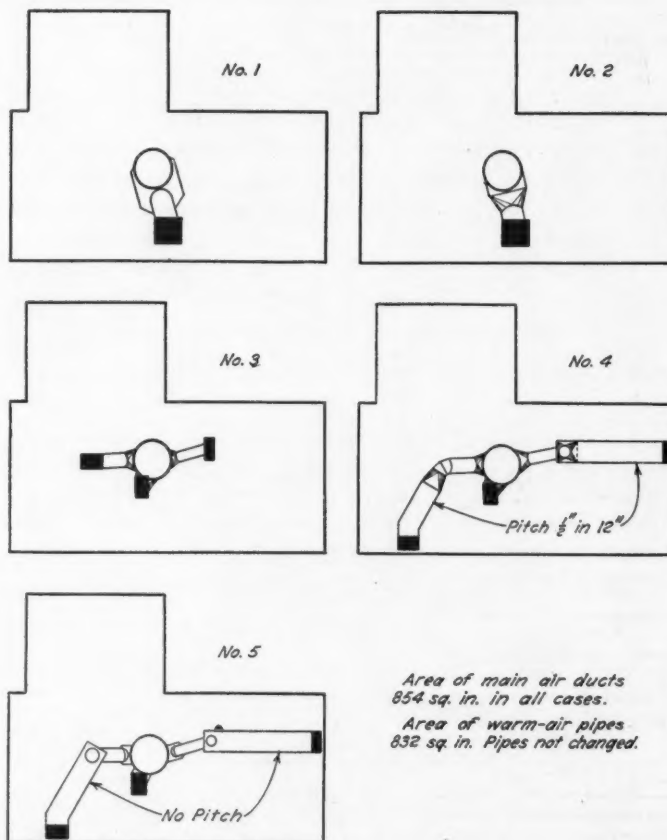


FIG. 4. ARRANGEMENT OF FIVE RETURN-AIR DUCT SYSTEMS IN RESEARCH RESIDENCE

Installation Number, R=Research Residence, L=Laboratory	Ref.	Butt/Left/No.
R-2	189	
R-1 L-1	189 141	
L-2	141	
R-3*	189	
R-4*	189	
R-5†	189	

* Shoe arrangement
† Shoe arrangement

FIG. 5. EFFECTIVENESS RATIO

TABLE 11
EQUIVALENT LENGTHS AND EFFECTIVENESS RATIOS FOR THE FIVE TYPICAL RETURN-AIR DUCT ARRANGEMENTS SHOWN IN FIG. 7

Type	Equivalent Length ft.*	Effectiveness Ratio†	Equivalent Carrying Capacity B.t.u. per sq. in. of return duct‡
A.....	44	1.00	144
B.....	143	0.84	121
C.....	140	0.84	121
D.....	253	0.69	99
E.....	434	0.44	63

*Calculated values based on equivalent length of elbows presented in Table 10, and on assumption that duct diameter was 33 in.
†Values obtained from Fig. 6.
‡Carrying capacity = 144 X effectiveness ratio.

a linear function of the estimated equivalent length. Hence, for any given return duct system, if the equivalent length of the duct system were known, the effectiveness ratio could also be determined. In Fig. 7 are shown line diagrams of five typical return-air duct arrangements in common use. The values for the calculated equivalent lengths, together with the effectiveness ratios which were determined from Fig. 6, are presented in Table 11. The equivalent carrying capacities shown in the last column of Table 11 were those used in deriving the return-air carrying capacities, for the various sizes of return ducts, which are shown in Appendix A.

(Continued on page 77)

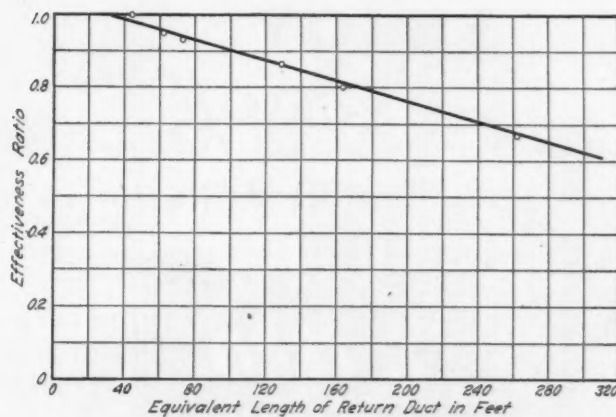


FIG. 6. RELATION BETWEEN EFFECTIVENESS RATIO AND EQUIVALENT LENGTH OF RETURN DUCT

TABLE 12
RETURN AIR DUCTS—STANDARD SIZES

Unit No.	Duct Diameter in.	Duct Area sq. in.	Area at Shoe Connection* sq. in.	Metal Grille, Gross Area Required† sq. in.	Area of Joist Lining and Rectangular Ducts* sq. in.
31	10	78.5	...	112	87
32	12	113.1	...	162	124
33	14	153.9	170	220	170
34	16	201.1	220	287	220
35	18	254.5	280	364	280
36	20	314.2	340	449	340
37	22	380.1	420	543	420
38	24	452.4	500	647	500

*Approximately 10 per cent greater than duct area.

†Gross area of grille to be approximately equal to $\frac{\text{duct area}}{0.7}$

Installation Number, R=Residence L=Laboratory	Reference		Test Arrangement of Return Air Ducts (Not to Scale)	Equivalent Length in Feet	Effectiveness Ratio
	Bul- letin No.	Page No.			
R-2	189	58		44	1.00
R-1 L-1	189 141	58 71		73	0.93
L-2	141	71		164	0.80
R-3*	189	62		62	0.95
R-4*	189	65		129	0.87
R-5†	189	69		262	0.67

*Shoe arrangement: West 12"x26", South 12"x26", East 12"x20".
†Shoe arrangement: West 14"x26", South 12"x26", East 12"x20".

FIG. 5. EFFECTIVENESS RATIOS OF RETURN-AIR DUCT ARRANGEMENTS TESTED IN RESEARCH RESIDENCE AND IN LABORATORY

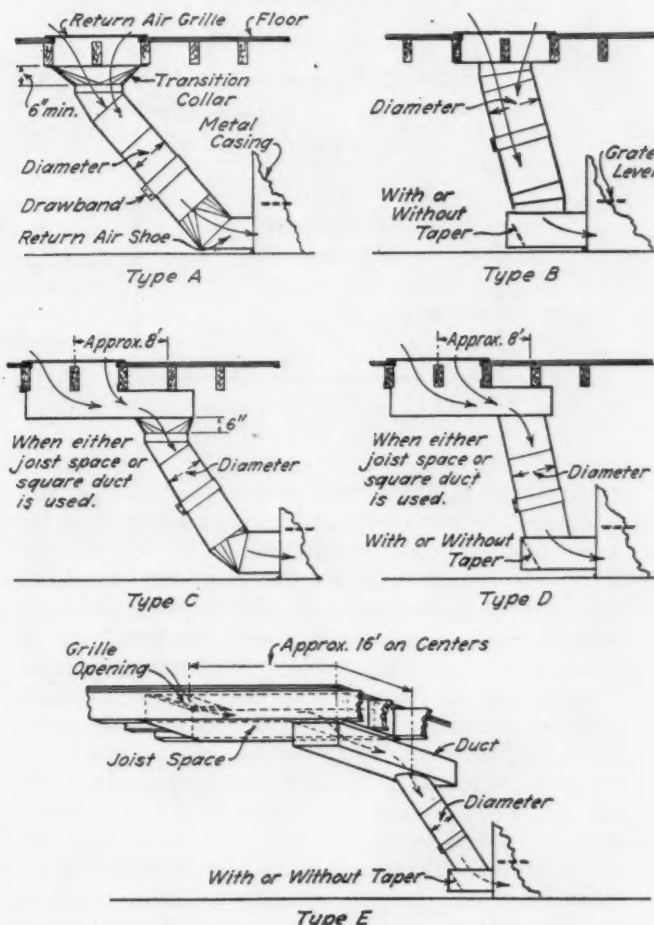


FIG. 7. FIVE TYPICAL ARRANGEMENTS OF RETURN-AIR DUCT SYSTEMS



ENJOY
UP TO 30%
ANNUAL FUEL SAVINGS!



Draft-free Ventilation in Winter
Rain-Proof Ventilation in Summer
RUSCO combines all the advantages of storm windows, screens and weather-stripping, in one compact unit—with fuel savings up to 30%. Interchangeable in 30 seconds from within.

FHA financed

UP TO 36 MONTHS

Use The Coupon or Phone

DAVIS BROTHERS
—ESTABLISHED 1905—
204 DILWORTH ST.
Pittsburgh
Everglade 6100

Name

Address

SINCE 1905, the firm of Davis Brothers has been active in sheet metal, roofing, heating and domestic air conditioning in Pittsburgh. Through good times and bad, the firm was able to maintain its proportionate volume of business and, through most of the years, the firm built its volume from the types of work mentioned above.

The present war, with its scarcity of materials and loss of mechanics to the armed services, would have had a rather disheartening effect if the firm's normal course of operation was still being maintained. Fortunately, five years ago, they began looking ahead and at that time opened up a new department which, during wartime conditions, has been given an impetus by government authorities which offsets the curtailment of customary peacetime business activities.

Davis Brothers Sells Special Storm Sash to Maintain Pre-War Volume

The new product and the new service the firm is now finding profitable to sell is storm sash. Not the usual sash of wood and glass to button outside windows, but a special sash which combines winter glass and summer screen—interchangeable from the inside.

To sell the sash, the firm has used newspaper advertising exclusively rather than direct mail. Where possible, these advertisements have been placed on a page devoted to fuel saving and home operating problems which runs in the Sunday editions of the Pittsburgh papers. The newspaper adds interest by publishing articles describing ways and means of saving fuel and items of interest to home owners.

Examples of the firm's advertising show that the theme is fuel saving. This theme, Davis Brothers reports, is a sure eye catcher and, since fuel saving is a "must" for many home owners,

STORM SASH

(COMBINATION TYPE ONLY)

GLASS FOR WINTER
SCREENS FOR SUMMER

FHA financed

Up to 36 Months to Pay

Storm Sash Specialists

Thousands of Satisfied Users

Call or Write

DAVIS BROTHERS
—ESTABLISHED 1905—

EVERGLADE
6100

204 Dilworth St., Pgh., Pa.

The newspaper advertising features fuel saving, because this is a timely subject this winter and emphasizes easy payment terms to pave the way for the approximate \$300 the owner must pay for the special sash on all windows.

the advertising has more than paid for itself.

The advertisements also show that easy payments over 36 months under the FHA home maintenance plan is emphasized and helps sell owners who otherwise might be inclined to buy the cheapest type of sash. Davis Brothers will handle all the details of the financing with their own or the customer's bank or loan company.

Sales Prices for Sash

The average installation price for a "window job" is from \$275.00 to \$325.00 for a complete house. A typical example on a \$300.00 F.H.A. 36 month plan sale would be—\$45.00 down with the order and the balance on F.H.A. at rate of \$8.15 a month for 36 months; on the 12 month plan it would be \$45.00 down with the order and the balance \$22.37 per month for the 12 months.

The firm does not wish to convey the impression that this storm sash activity is the panacea for all operating troubles under the emergency. Mr. J. E. Davis says:

"Our window activities are not all 'milk and honey.' Some phases are a terrific headache. One problem is deliveries, in some cases still dating back to last August; another is the variety of types of hardware and materials to meet priority requirements, etc; a third is partial jobs tying up completion certificates for months at a time; these have all contributed to a situation that is

ENJOY UP TO 30% ANNUAL FUEL SAVINGS!

Draft-free Ventilation in Winter
Rain-Proof Ventilation in Summer

RUSCO combines all the advantages of storm windows, screens and weather-stripping, in one compact unit—with fuel savings up to 30%. Interchangeable in 30 seconds from within.

Specialists for both
Wood or Steel Case-
ment Windows. Thou-
sands of satisfied users.

FHA Financed
Up to 36 Months
Call or Write

204 Dilworth Street,
Pittsburgh, Pa.

EVERGLADE 6100



tolerated only because we have a 'going business' and quite a bit at stake and have to keep going War or no War. One type of storm window used with steel casements requires very close management and supervision which would not be possible without the fair-sized personnel and experience we have gained in this type of activity. So I really believe the average sheet metal shop that would start out in steel casement work might be quite likely to run into considerable trouble under present conditions."

To follow up the newspaper advertising, the firm also makes a practice of offering buyers of the sash a small commission for any leads which they turn in when these leads result in sales. Information about the commission is passed to the sash user by personal call and telephone or letter. Many sales have resulted from these users.

Salesmen Are Hard to Hold

So far as possible, the firm has tried to hire salesmen to solicit sash sales. But salesmen are hard to get and even harder to hold because of the "pull" of war work and many salesmen get discouraged when sales get slack. Those who will sell consistently have earned handsome returns, the firm reports. The firm also tries to point out to the salesmen that this type of window has no "season," but is a year round proposition and just as saleable in summer as in winter.

The firm has always pushed summer furnace cleaning and of late has used the type of double postal card shown. This year, however, because of losing so many men to war plants and the armed forces, it was not possible to clean the usual number of furnaces so the cards were not mailed. However, as much cleaning as possible is being handled for old customers.

Let Us VACUUM CLEAN YOUR HEATING SYSTEM A CLEAN FURNACE SAVES FUEL

Eliminates Dust in your Home . . . Preserves your Heating Equipment

A dirty heating system deposits dust and dirt on drapes and home furnishings which ruins them.

Soot and ashes left in the castings and smokepipe gathers moisture which rusts and destroys the heating system.

Home owners pay for having their heating systems cleaned—whether they have the work done or not—3/16 of an inch of soot means 62% loss in efficiency or \$6.20 out of every \$10.00 spent for fuel.

Our modern efficient cleaning equipment enables us to vacuum clean and service your heating system at an attractive low cost.

Phone Ev. 6100 or Sign and Mail Today!

I wish to have my Furnace, Smoke pipe, Hot and Cold air pipes including all registers cleaned at the present price of \$9.00 cash.

In addition it is understood that you will clean free of charge the tops of every furnace pipe in the basement.

Please call before you come. Phone _____

or come _____

Name _____

Address _____

Printed in U. S. A.

The firm has always cleaned several hundred furnaces. The postal card shown was used last year. This year mechanics are scarce so the number of cleaning jobs will be restricted to old customers.



Left—Exterior of the “minimum-wood-use” apartment for six families with a gravity furnace for each apartment. Building is in project of Ohio Defense Homes, Inc., Columbus, Ohio.

Below—Typical gravity furnace as installed by The Home Furnace Company of Columbus, O. Single return air duct.

Gravity Furnace In The “Six-Family, Two Story Apartment”

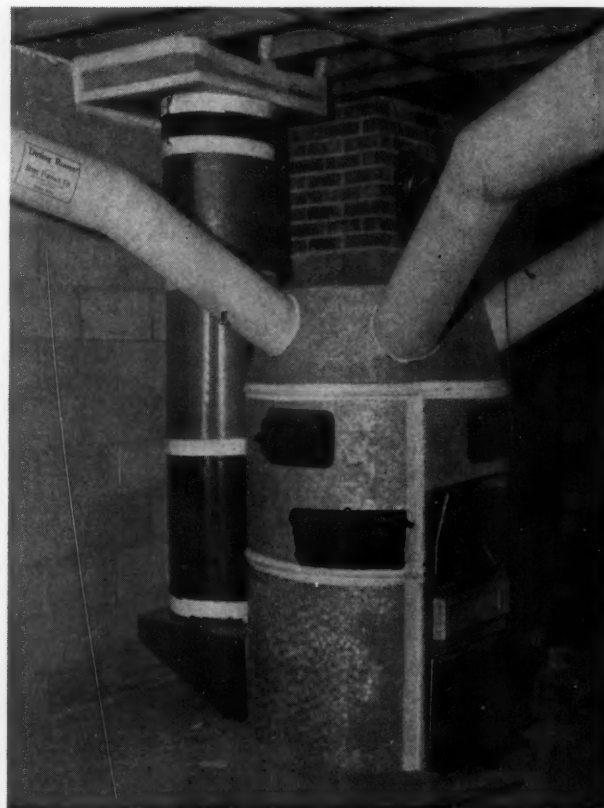
IN THE privately financed, privately constructed, war worker housing program of 1942, a new type of structure unofficially known as the six-family, two-story apartment made its appearance in several housing shortage areas. As constructed, this structure found approval among the housing agencies because it uses non-critical masonry for the exterior, provides five rooms and bath for the better-to-do worker or executive, is attractive enough to be located in high value property areas, and requires a minimum of critical materials because of its apartment grouping, which compacts plumbing, heating and electrical systems.

Officially, this type of structure is known as the “multi-family Title 6, minimum-wood-use apartment building” for workers who wish to rent, not buy, and, according to NHA, proves that a sound, comfortable family dwelling is possible under the material restrictions now in effect.

May Be Many of These in 1943

With such housing agency approval, it seems quite likely that in the 1943 program this type of building will continue in favor as against the single, detached house, so a study of the heating systems installed in houses of this type in 1942 is in order.

The photographs and drawings show the layout of a typical, inside apartment, the outside of the building, and details of the heating system. The



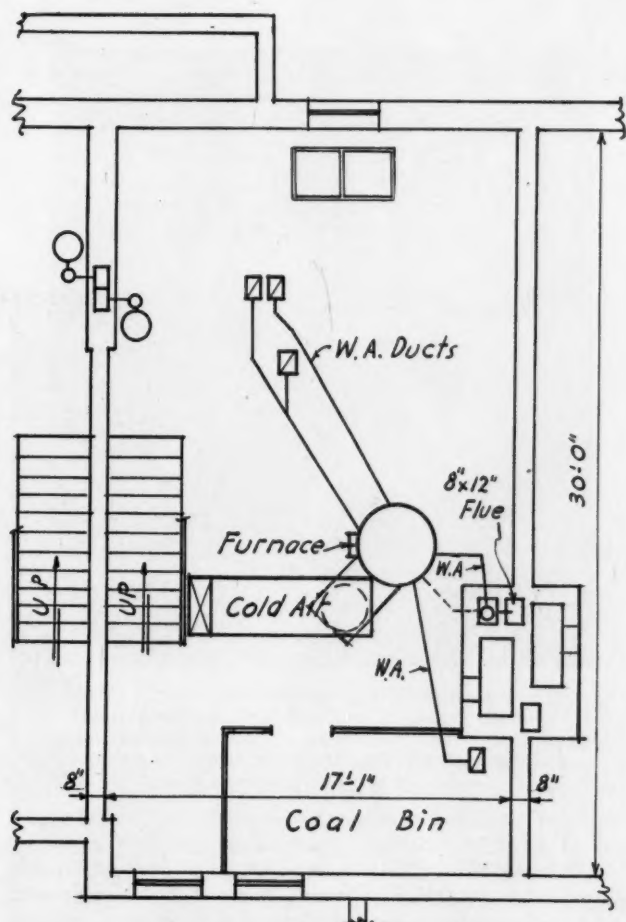
building photographed is one of several erected in Columbus, Ohio, by the Ohio Defense Homes, Incorporated, Sam Roessler, president.

The gravity, warm air furnaces in the buildings were installed by The Home Furnace Company, Columbus, operated by A. E. Bogen, who has been one of the strong heating contractors in Columbus for many years. Mr. Bogen reports that his firm has installed approximately 200 of these systems in buildings of this type.

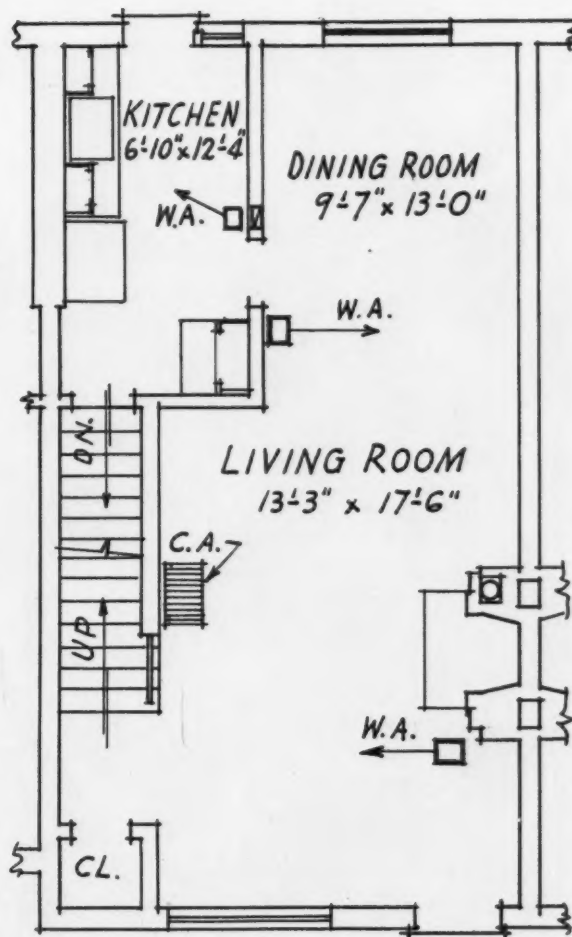
Typical Installation

As the drawings and photographs show, there is a full basement under each apartment. Each apartment is completely closed off from the other apartments by masonry fire walls, so it is possible for each tenant to have his own heating plant and it is also possible to have a small gravity furnace, coal burning. Mr. Bogen reports he uses 18-inch Rybolt cast iron furnaces in these buildings.

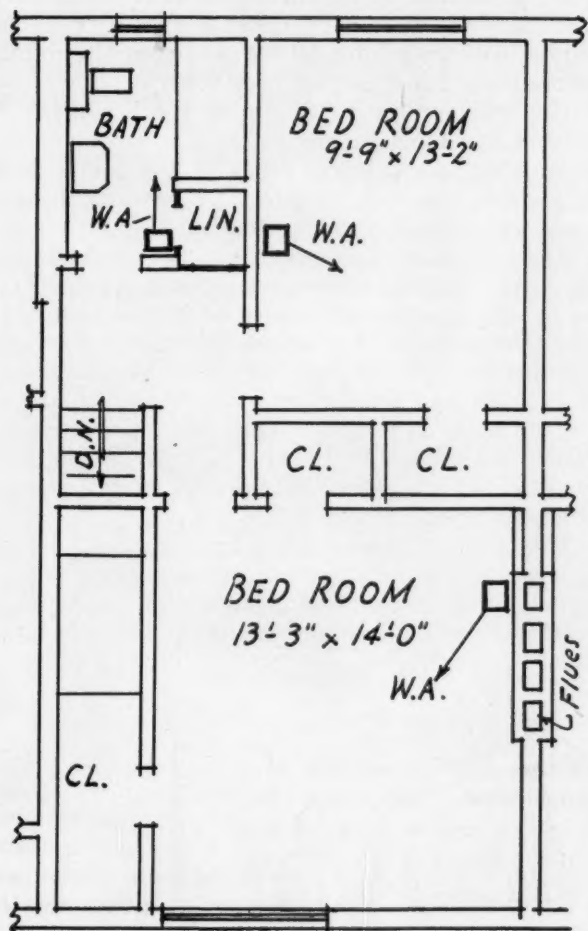
As the plans and photographs disclose, there is some small variation in the warm air supply and return air systems from apartment to apartment due to small variations in room arrangement and location of warm air registers. The return air system is pretty much the same and consists of



BASEMENT PLAN

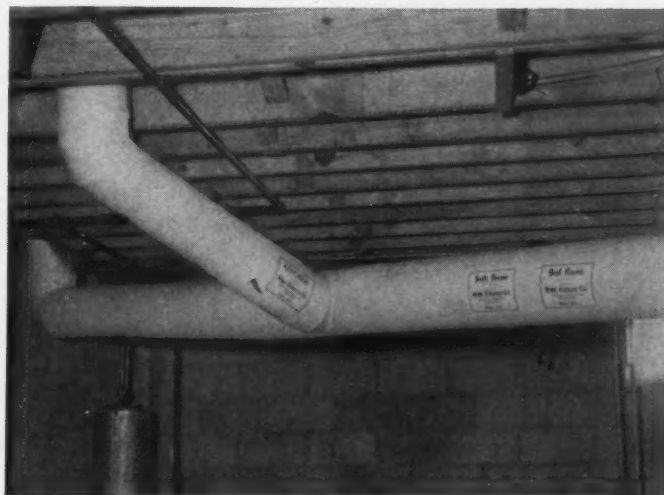


FIRST FLOOR

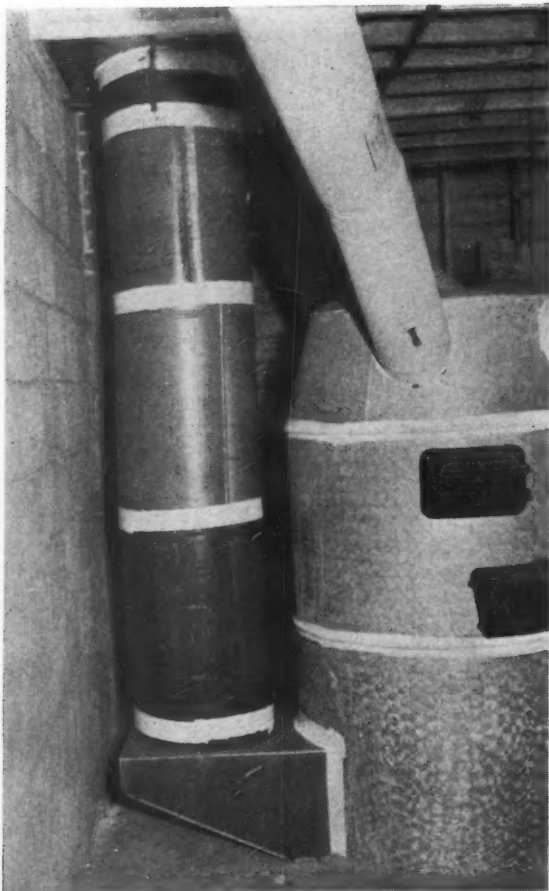


SECOND FLOOR

Plans show basement piping, first and second floor registers and single return air grille on first floor. Note front bedroom stack in brick chimney. All registers are in the floor. Two registers served by one leader where possible.



The two-register leader varies from apartment to apartment due to location of registers. All pipes are papered and identified for future balancing. Each branch or leader has a damper.



one large floor grille in the living room at the base of the stairs. No direct return is taken from the second floor, the stairs being depended upon to provide a path for the returning air. Where the furnace stands across the basement from the stairs, two joist spaces are panned across and then one large straight-drop, round pipe connects with a special Home Furnace Company shoe. By comparison with University of Illinois Engineering Experiment Station simplified gravity manual (Bulletin 45) the complete combination of panned joist, square box, straight drop pipe and special shoe should show an overall effectiveness ratio of probably 75 to 80 per cent.

Again, because of small variations in locations of warm air registers (note, all registers are in the floor), the warm air supply system usually requires only four round, papered basement leaders. In the photographs the kitchen, bedroom and bath use one leader; in the plan the kitchen and dining room are on one leader and the bedroom on a separate leader. The decision is made on the basis of the fewest basement leaders consistent with good heating practice.



The return air drop is spot welded and the three sections are metal screwed together for a single piece return. All joints are sealed with 3-inch asbestos strips. Above is the round leader and transition for living room register.

One unusual run of supply pipe is shown on the plans where the front, second floor bedroom has a basement leader connected with a round pipe stack bricked into the chimney and a joist space crossover to the floor register. This construction was necessary because the fire wall is solid and there is no partition between the living room-dining room on the first floor.

The considerable headroom in the basement is utilized by Home Furnace Company to include a steep pitch to the leader pipes off the bonnet and to maintain some pitch even in the long leader pipes which serve the rear rooms.

Home Furnace Company likes to spot weld all pipe and fittings; on the system photographed the return air pipe is spot welded on the longitudinal seams and the three sections are metal screwed together and erected as one piece with a short stub collar and draw band at the top to take up any variation in length. Warm air pipes are spot welded on longitudinal seams but are slip jointed together and papered as shown. Metal screws are used where necessary.

This type of heating system provides central heat supply, in the basement, convenience of firing and tending, recognized design and installation practices—at a minimum amount of critical materials.

This job is interesting because it shows the installation of a gravity furnace in a low-heat-loss apartment. Under the 1942 "War Housing Construction Standards" a gravity furnace was not permitted in a 40,000 Btu loss unit. The change to "War Housing Manual" specifications is discussed in this issue.

The War Housing Manual

Effective December 12, 1942, prescribes the procedure for building, war housing and tells what materials we may use and how. For complete details get a copy from your local WPB Construction Bureau

ON October 28, 1942, the Director General for Operations WPB issued "War Housing Construction Standards" see AMERICAN ARTISAN, December, 1942, page 35. These construction standards specified the materials which might be used in new housing and even specified the maximum allowable floor area according to the number of rooms.

This construction standard was of vital interest to the warm air heating industry because the standard specified that where the heat loss for a building was less than 40,000 Btu., the building must be heated by a floor furnace, or one pipeless furnace, or one space heater, or one chimney furnace. If the heat loss of the building exceeded 40,000 Btu. and for any heat loss permitted in two-story structures, the building must be heated by one gravity warm air furnace, or one space heater, or one chimney heater, or one chimney furnace or other forced circulation warm air furnace dwelling unit in basementless one-story, 3-bedroom units or in any basementless 2-story structure. For one and two-story structures, where the heating system serves four or more dwelling units, the building must be heated by one-pipe steam or one-pipe forced hot water with radiators. For dormitory type apartment structures, the building could be heated by one forced circulation warm air furnace, or one-pipe steam or one-pipe forced hot water.

Effective December 12, 1942, these war housing construction standards were discarded and in place there was issued the "War Housing Manual" and in the manual there is nothing said about the type of heating equipment which must be used in the particular structure. Under the manual which is now in effect, a structure having a heat loss of under 40,000 Btu. may be heated by a gravity warm air furnace or by a forced warm air furnace, or by any other type of heating system. In other words, the field is now wide open for this industry to sell gravity and forced warm air furnaces in any size or type of war housing.

It is suggested that all contractors obtain from Housing Branch, Construction Bureau, War Production Board, a copy of the "War Housing Manual" and study the section on heating which begins on page 33 of the manual.

Ratings on Furnaces

This section on heating is of concern to our industry because all types of heating systems are given an official rating and this rating is not in all cases the same rating as the manufacturer attaches to his furnace. For example, a solid fuel burning gravity furnace shall be rated (according to the manual) at 90 per cent of the manufacturers' certified register output at 55 per cent or higher efficiency.

Contractors are especially warned to pay attention to General Section 500, sub-section 511, which states—the maximum net hourly output capacity of the heating unit in Btu. shall not exceed 66 times the dwelling area in square feet or 80,000 Btu. per dwelling unit, whichever is smaller.

The ultimate result of this manual is that the house must be figured to have a total heat loss at 70 degrees inside, at the outside design temperature of 66 times the floor area or 80,000 Btu. per hour, whichever is the smaller and the heating plant must have the same output capacity. It is not permissible, therefore, to place a 60,000 Btu. capacity furnace in a 40,000 Btu. heat-loss building. In all new war housing construction, therefore, the contractors should carefully check the heat loss of the house or should ask the builder to certify the heat loss and the contractor should recommend equipment which just equals this heat loss.

Readers will recognize that much of this discussion has previously been presented by Professor S. Konzo, but the editors believe that in view of the fact that the housing standards have been eliminated and the housing manual substituted therefore, this whole matter of size and type of heating equipment for new war housing warrants continued discussion.

Readers who are interested will find a very interesting discussion in the July, 1942, ARTISAN, pages 42 and 43, prepared by Professor S. Konzo. For those who do not have this July issue, we republish in following paragraphs the principal sections on heating from the War Housing Manual.

Excerpts From Heating Section

500 Heating.—See War Housing Construction Standards.

510 General.—

511 The maximum net hourly output capacity of the heating unit or system as determined in 514 or 515 hereof is the capacity after deductions have been made for piping and pick-up, attached domestic water heaters, and non-dwelling heating loads—available to provide for the total hourly heat loss of the dwelling it heats. Such maximum net hourly output capacity in B.t.u. shall not exceed 66 times the dwelling area in square feet or 80,000 B.t.u. per dwelling unit, whichever is the smaller.

512 The total hourly heat loss of a dwelling shall not exceed, in any case, 66 times the dwelling area in square feet or 80,000 B.t.u. per dwelling unit, whichever is the smaller, and shall be determined in accordance with the data and methods described in the current edition of the "Guide" of the American Society of Heating and Ventilating Engineers or by an alternate method which results in not less than the amount determined by the "Guide" method. Such total hourly heat loss shall be

based on maintaining 70° F. inside the dwelling when the outside temperature is at the design temperature for the locality. (Space such as unheated garages, attic and basement-less spaces shall be calculated at outside design temperature.) Storm windows and doors furnished shall be credited with the heat loss reduction they effect. Regardless of the capacity of heating plant installed, the heat loss of a one-family or multifamily dwelling or dormitory shall not exceed these limits.

- 513 Dwelling area is the total area used for dwelling purposes contained within the exterior walls at each principal floor level excluding garage and unfinished storage space, but including only the finished area of any living, sleeping, dining or kitchen space located in the basement or attic.

- 514 *Equipment may be rated within a range of specified firing rates selected by the manufacturer if at any firing rate within that range its performance certified by the manufacturer to have been determined by test is within the limitation of the applicable code or standard specified in 515.*

- 515 Except as provided in 514 hereof, the maximum net hourly output capacity is determined as follows:

5151 Floor furnace:

Gas-fired—90 per cent of published, listed, or labeled output rating determined in accordance with "Gas Floor Furnaces, Gravity Circulating Type, Commercial Standard, CS99-42," or 90 per cent of the American Gas Association output rating.

Oil-fired—90 percent of manufacturer's certified output rating at 70 percent or higher efficiency.

5152 Space heater:

Solid fuel burning—According to the "Tentative Draft of Commercial Standard for Coal Burning Space Heaters, TS-3297."

Gas-fired—90 per cent of A.G.A. output rating.

Oil-fired—100 per cent of published, listed or labeled rating determined in accordance with "Flue Connected Oil Burning Space Heaters Equipped with Vaporizing Pot Type Oil Burners, Commercial Standard, CS-101-43."

5153 Pipeless gravity furnace:

Hand-fired coal—90 per cent of the manufacturer's certified register output at 55 per cent or higher efficiency.

Oil-fired—90 per cent of the manufacturer's certified register output at 70 per cent or higher efficiency.

5154 Gravity furnace:

Solid fuel burning—90 percent of the manufacturer's certified register output at 55 per cent or higher efficiency.

Gas-fired (furnace-burner unit)—75 per cent of A.G.A. bonnet output rating.

Oil-fired (furnace-burner unit)—according to "Proposed Commercial Standard for Warm Air Furnaces with Vaporizing Pot Type Oil Burners, TS-3303," or subsequent revision thereof.

5155 Forced warm-air furnace:

Hand or mechanically fired solid fuel burning—according to "Tentative Commercial Standard for Coal Burning Warm Air Furnaces."

Gas-fired (fan-burner furnace unit)—85 per cent of A.G.A. output rating.

Oil-fired (fan-burner furnace unit)—according to "Proposed Commercial Standard for Warm Air Furnaces Equipped with Pot

Type Oil Burners, TS-3303," or subsequent revision thereof.

- 516 Limitation on oil-fired equipment. The installation of oil-fired equipment for space-heating is not permitted within the areas restricted by the W.P.B. limitation order L-56.

- 517 Limitation on gas-fired equipment: The installation of equipment utilizing natural, mixed natural and manufactured, or manufactured gas is not permitted for space heating within the areas restricted by W.P.B. limitation order L-31 and L-174.

PERMISSIBLE INSTALLATIONS

520 Overflow heaters.—

- 521 Floor furnaces and pipeless gravity furnaces—ferrous metal—no metallic coating.

5211 Registers—stamped, fabricated or cast ferrous metal—no metallic coating.

- 522 Space heaters, stoves and other similar heating devices—ferrous metal—no metallic coating. (Refractory lined type shall be used wherever available in lieu of all metal type.)

530 Warm air distribution systems.—

- 531 Furnaces—ferrous metal—no metallic coating.

5311 Fans, blowers and motors—for forced air systems.

5312 Filters—for forced warm air systems—non-metallic containers and filter material with ferrous metal grid.

532 Distribution materials:

5321 Ducts—straight runs of nonmetallic materials, zinc coated ferrous metal permitted for fittings, hangers, and fastenings. Metal heavier than No. 26 gauge not permitted.

5322 Registers and grilles—Registers of stamped, fabricated, or cast ferrous metal, no metallic coating. Metallic grilles not permitted.

550 Firing equipment.—See paragraphs 516 and 517.

- 551 Oil, gas, or sawdust burners.

- 553 Oil storage tanks—ferrous metal, no metallic coating; size not to exceed 275 gallons capacity for tanks serving three units or less and to not more than 100 gallons per dwelling unit for tanks serving four dwelling units or more. Shells of ferrous metal tanks shall be less than 3/16" thick. Ferrous metal reinforcing permitted for concrete tanks which are the preferred type.

- 554 Oil-line pumps.

- 555 Vent, fill, and oil-line piping and fittings—ferrous metal, no metallic coating.

560 Control equipment.—

- 561 Electrical material as allowed under 330, 340, 350, 360, and 370 of Electrical Section.

- 562 Relays and solenoids.

- 563 Damper regulators.

- 564 Thermostats (room, aquastats, air stats, combination fan and limit controls, combustion safety controls).

- 565 Pressure controls:

5651 Pressure-reducing valves.

5652 Pressure stats.

5653 Pressure-relief valves.

- 566 Shut-off cocks for gas heaters, furnaces and boilers.

- 570 Breechings and smokepipe.—Ferrous metal, no metallic coating. Breechings for multifamily heating systems may include necessary clean-out doors. Ferrous sheets less than 3/16" thick.

- 580 Vents and flues.—For heating equipment in prefabricated houses—ferrous metal, no metallic coating. Vents may include necessary casings, supports, and connections.

AMERICAN ARTISAN

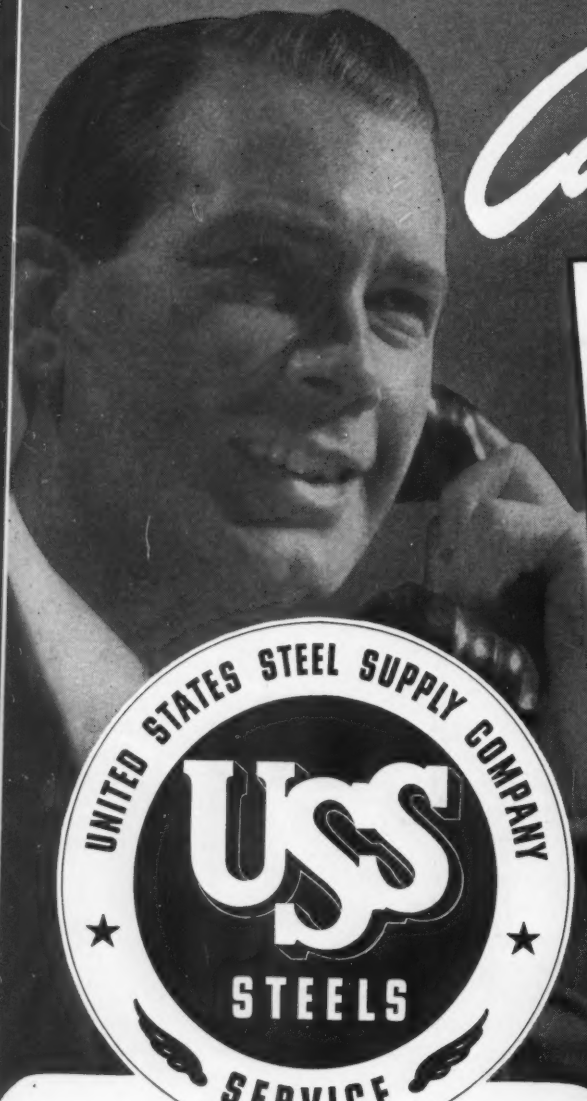
SHEET METAL

SECTION



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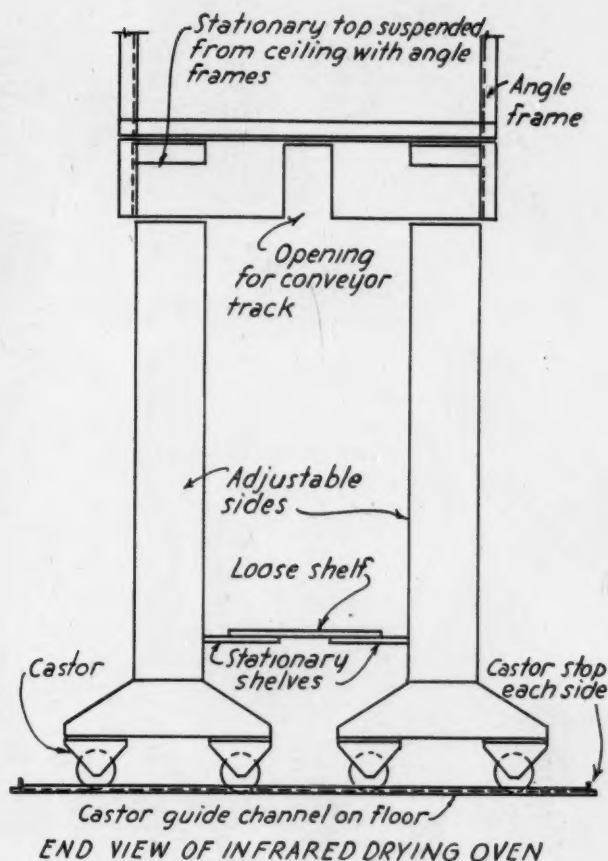
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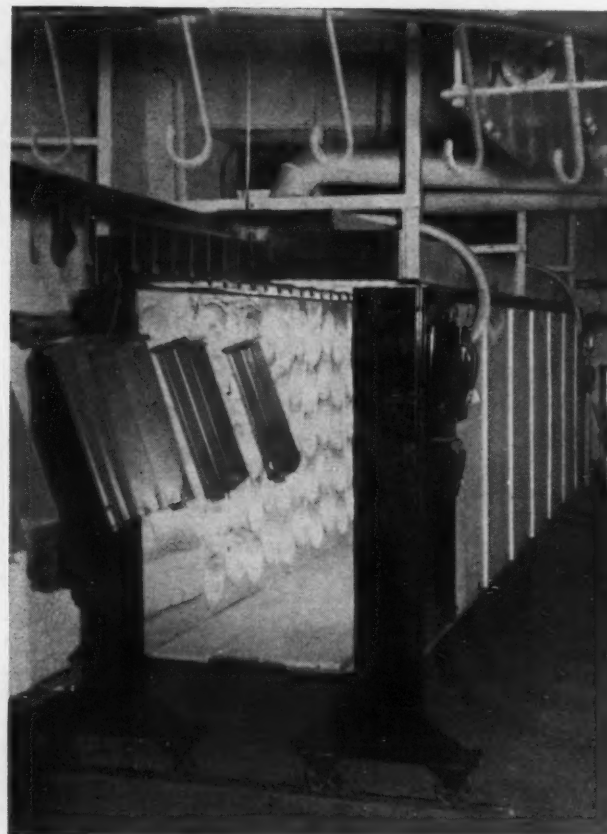
Adjustable Infra-Red Drying Oven

UNTIL the advent of infra-red drying, the sheet metal fabricator with items to paint finish either sent the items out to a finisher or used up valuable floor space for a direct- or indirect-fired oven and added to his cost several hours of time loading and unloading the oven and waiting the necessary one, two, three hours for the load to dry.

But just about the time the war started in Europe, the infra-red method of drying gained recognition and revolutionized both drying processes and the former method of finishing products.

Most readers who do finishing understand the principles of the operation. Briefly, the product is coated with the finish material and is then subjected for a few minutes to the direct rays of infra-red lamps. The infra-red rays pass through the paint to the body of the metal and heat the metal so that the paint dries from the inside out. To be sure that all surfaces of the product are heated up uniformly and equally it is necessary that the infra-red lamps be just the proper distance away from the surface. This means that the lamp cabinet, or "tunnel" must be correctly designed for the particular object to be dried or the tunnel should be flexible to accommodate products of varying size and contour.

The photograph and the corresponding sketch



shows an ingenious, adjustable infra-red tunnel now in use in the shop of the Riester and Thesmacher Company, of Cleveland. This firm now dries by infra-red almost exclusively; the large direct-fired drying oven has been relegated to the sidelines.

This adjustable tunnel is the result of many months experimenting with infra red drying as a method for use on the many different products, of all shapes and sizes, which the company produces. Non-adjustable ovens produced finishes which might be too brittle, or too soft, or spotty, or tacky until time consuming adjustments were made to the lamp arrangement.

To overcome these disadvantages the double-bank, adjustable tunnel detailed in the sketch was designed. The two side banks of lamps may be pulled in or pushed out to place the lamps just the right distance from the object being dried. The design provides a top and bottom to keep heat within the tunnel. Additional flexibility is obtained by passing the products through the tunnel so suspended that the large surfaces face the lamp banks.

The spray painting booth is at the rear of the photograph so that pieces painted are hung directly on the conveyor. Emerging, dried, from the tunnel, the conveyor carries the pieces to floor areas for stock piling.



Lock seamed Monel sheets are suitably cut for application slantwise and are nailed to the wooden lining with Monel "Anchorfast" nails applied along two of the four sides of each sheet as shown in the drawing facing. The standing seam is then bent back over the nail heads and soft soldered. The slanting seam should be dust or powder free

Fish Hold Construction Suggests A Better Way To Line Vats*

NOT many sheet metal contractors, probably, will be called upon to line storage holds of ships, but contractors in many areas may possibly be called upon to line the "vats" of powdered milk plants, "bins" of dehydrated vegetable plants, and other similar storage rooms where products are now or will be prepared for water evaporation.

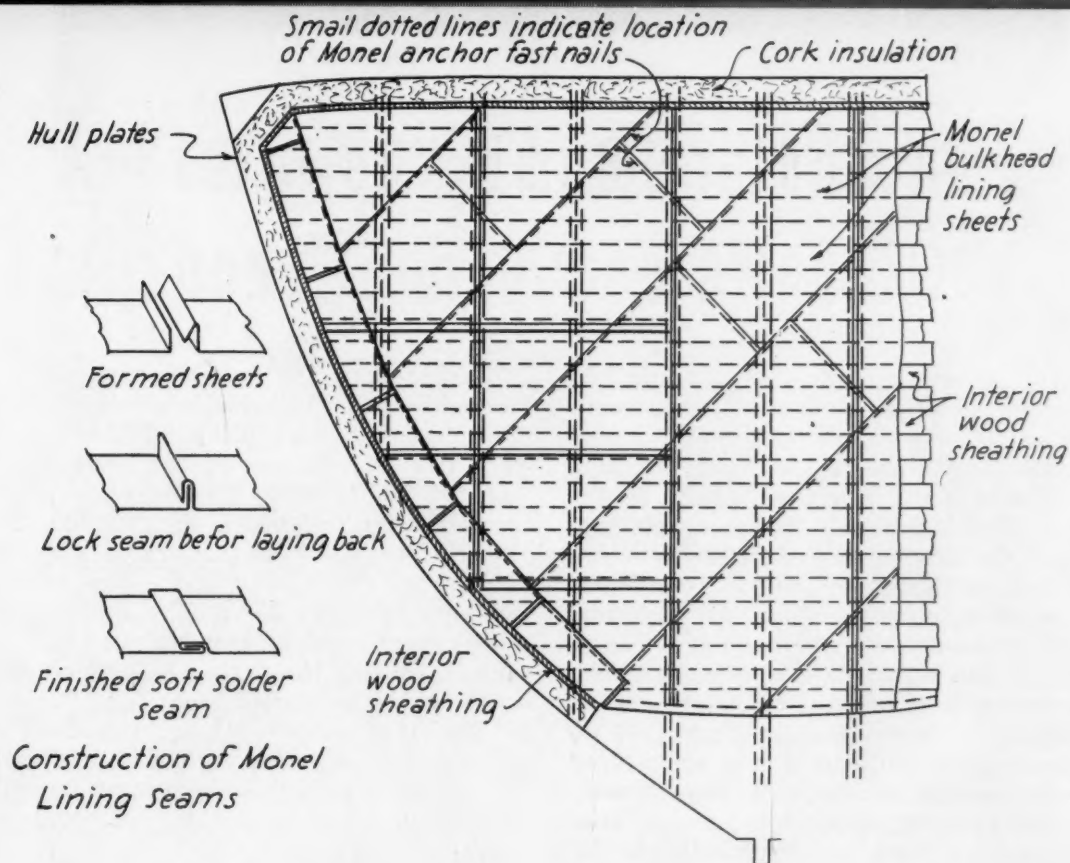
Usually, the practice in lining has been to lay the lining sheets square with the horizon; seams running horizontally and vertically; ease in cleaning depending on well flattened and soldered joints which present a minimum of area for material to lodge upon.

*Photographs furnished by and article rewritten from story in "Nickelsworth," Publication of International Nickel Company.

An interesting departure from usual practice is shown in the drawing and photographs of Monel sheets, 20 gauge, laid slantwise over the backup sheathing to form a sanitary lining for the holds of fish trawlers operating for General Sea Foods Corporation.

Perhaps this form of application has some possibilities for a change in usual design because slanting seams should present less area for powder to lodge and washing down should clean each seam more thoroughly. Perhaps a little more material is required, but a careful use of scrap should minimize wastage.

The sheets in the trawler hold were seamed as shown in the drawing. No cleats were used; instead the Monel nails were driven through the sheet close to the standing edge. Then when the



seam was folded over and malletted down the nails are under three thicknesses of metal. Further, the seams were folded down wherever possible so that the seam is closed by the top sheet. The open edge of the seams is down.

Seams were soldered for tightness, but this construction presents a solid seam upward even though a spot may be lacking in solder. Nailing was along two edges only.

Monel, nickel-clad or stainless steel offer sanitary, corrosion resistant, smooth, hard surfaces which eliminate all danger from rust, will stand

abuse, and are easily cleaned by steam, high pressure water or other means. The construction suggested utilizes to the maximum the characteristics of the material.



After the seams are nailed and the standing seam turned down the seam is closed by soft soldering as shown in these two photographs.

Incendiary Bomb "Remover"

By Ernest E. Zideck

THE majority of the ARTISAN readers have, no doubt, seen the handling of the incendiary bomb in the movies. Buckets containing a certain grade of sand are kept at hand, the sand is shoveled over the fire-spitting bomb, finally the bomb is deposited in one of the buckets and covered with the sand, a long stick or bar is inserted through the handle of the bucket and two people, one at each end of the stick, carrying the bucket to the outside of the building. Water also is used, a fine spray playing over the bomb, until it seems ready to be deposited in the bucket and carried out.

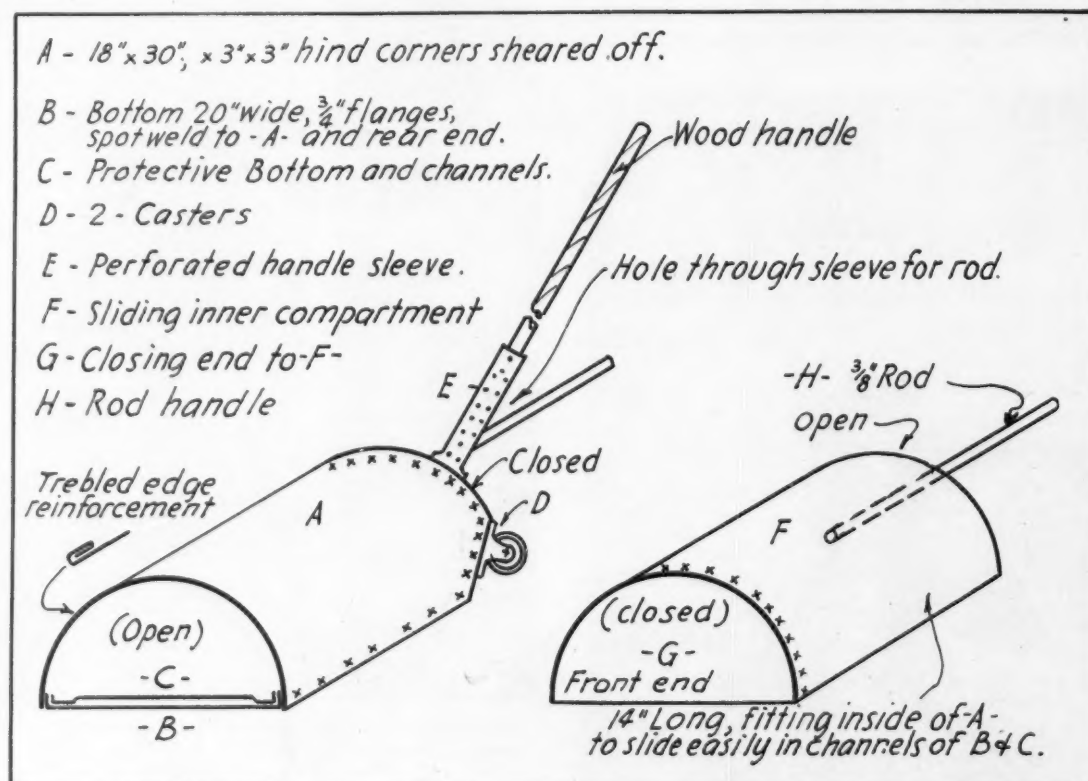
In the accompanying drawings is shown a sheet metal device, seamed or spotwelded or riveted, whichever is the most practical and designed to be manipulated by a long, wooden handle held in a perforated metal sleeve fastened to the one end of the construction. Two casters, fastened as shown in the drawing, wheel the device over the floor or ground to the burning bomb. By manipulating the rod reaching up to the wood handle, the inside container is pulled into the outside container thus fully inclosing the bomb.

The bomb being almost 16 inches long, the bottom —B— of the device should be over 18 inches, and a sheet metal blank sheared 18x30 inches will provide the outer part —A—, formed on a

9 inch radius. The front edge of —A— is reinforced by either inlaid wire or a double bend, the reinforcement held inside of the construction. The two rear corners of the blank are sheared off, 3x3 inches on 45 degrees, to permit the two casters being fastened to the rear end, flush with the bottom —B—, so that the casters do not interfere with the sliding part, —F—, moving horizontally with the floor. The bottom —B— extends over the 45 degrees rear end and then vertically, making the part —A— wholly closed except for the reinforced front.

The other bottom —C—, is not absolutely necessary, because when the device is tilted to ride on the casters, the bottom is away from the floor and the metal, no matter how hot, could not ignite rugs or carpets over which the device would be wheeled. But in view of the part —C— providing channels for —F— to slide in, we might just as well make the bottom double, with the front and rear edges of —C— bent down on 45 degrees, the edges reaching to the bottom —B—, the front edge fastened to it by weld or rivets, providing a double, dead-air insulated bottom to the device, which the burning magnesium in the bomb can not damage.

The sliding part —F— may be sheared to same
(Continued on Page 84)



A Costing and Incentive Method For Shop Welding Operations* [Part 2]

By Virgil Cochran

Assistant to Superintendent, Le Tourneau Co., of Georgia

Cost Determination

NOW that the total units produced by departments has been obtained, the next step is to find the cost of each unit.

The payroll is divided into seven departments. Five of these are Productive Departments and the remaining two are service departments. The production departments are as follows: (1) Cutting Department, (2) Heat Treat Department, (3) Machine Shop, (4) Cleaning and Painting Department, (5) Fabrication and Assembly Department. Each of these major production departments is composed of several groups or sub-departments. This is necessary for the standards clerical department because it permits better distribution of clerical work in the office and also permits intra-departmental competition. Both departments and individual workers with the highest premium and index are honored in the weekly publication printed for the employees. Another reason for subdividing the major departments is that it sets up a practical method for computing the foremen's weekly bonus, which is based on accomplishments of employees in his group. For payroll purpose, however, only the major departments are recognized. A company may break the departments down for establishing its cost centers just as far as it thinks practical for its own particular plant.

The service departments are: (1) Shipping Department; (2) Miscellaneous Department. The Miscellaneous Department includes the Maintenance groups, the production clerical workers, the labor gang, and similar types of miscellaneous labor and clerical workers. Productive work is occasionally done in the Miscellaneous Department by apprentice welders who are so classified until they can properly be called welders. During their training they may attain such a degree of proficiency that they are permitted to weld certain parts. Whenever they work on a production part, it is necessary that they turn in a report of the parts that they complete so that we have a

**Data and illustrations from a study, "A Plant Weldery," submitted to the James F. Lincoln Arc Welding Foundation in its recent \$200,000 Industrial Progress Award Program for reports and advances and improvements made by the applications of arc welding in design, fabrication, construction and maintenance.*

record of the work produced, and the wages earned by them are transferred to the department where the work would normally be handled.

Shipping Department wages and expenses are charged to selling expense. The employees of this department work on the incentive plan but no cost records are made on the department except for comparative purposes.

The labor distribution for workers in the service departments is made from standard job time recording cards which these employees punch "in" and "out" as they change jobs. This labor is valued on an average hourly wage basis and charged to the proper manufacturing expense account.

At the end of the month, when the total payroll and the "B" units have been accumulated by departments, it is a simple arithmetical procedure to find the labor cost per "B" unit produced. Inasmuch as we have five productive departments, we will have five "B" unit labor values. It is surprising to note the small variance in these labor costs per "B" units produced from one month to the next. Assuming that there have been no changes in the basic hourly rates during the month, the costs will not vary more than a fraction of one per cent.

Monthly cost sheets are sent to each major foreman showing his "B" unit cost for the month broken down by labor, controllable overhead, and uncontrollable overhead. If the "B" unit labor cost shows an increase over the preceding month there was probably more non-productive labor in the department or it may have been idle labor. These facts are quickly ascertained by the plant manager when he becomes trained in analyzing such reports.

Accounting for Material

In this type of industry, steel is the principal raw material. Other raw materials are also used, but they are small in comparison with the quantity and value of steel consumed. While different types of steel are purchased at varying prices, the difference is not great, so a running average cost is used for charging material to each particular part. To date it has not been found practical to charge each part for the particular type of steel which is used in its manufacture, although it would be quite easy to do so for more exact costs.

Following is the procedure used in charging

Exhibit 6—When a new job is started through the shop one of these “Work in Progress” ledger sheets is begun. The sheet shows Engineering Dept. estimates and final material quantities. Adjustments are made as explained in the text.

When a job has been completed, the material cost for the finished parts is compared with the material cost of the same part made on a previous job to disclose any errors in calculation.

which the cost accountant makes the proper book entries.

Each manufacturing expense subsidiary account is broken down into the same departments as the payroll. In this procedure, expenses from the voucher record are charged directly to the department where the expense is applicable, for example, replacement blades for hacksaws in the cutting department are charged to Cutting Department (Shop Supplies). Thus, at the end of the month the total expenses by departments are determined and it is another simple arithmetical calculation to divide the total manufacturing expense of each department by the "B" units produced to find the overhead cost per "B" unit produced. There are certain expense items which are not chargeable to a particular part. Salary of plant superintendent, repairs to buildings, supplies for general use, and shop stationery supplies are examples of this type of expense. These are charged to the miscellaneous department. Then, at the end of the month, all miscellaneous expenses are distributed over the productive departments in proportion to the direct labor within each productive department, space occupied, or on some other equitable basis. Through this procedure, the productive departments absorb all of the manufacturing expenses of the entire plant.

At this point information is available to arrive at the total "B" unit value, which is the labor cost per "B" unit plus the overhead cost per "B" unit. For example, if the labor cost per "B" unit, in the cutting department, is \$.015, and the overhead cost per "B" unit in the same department is \$.021, our total "B" unit value for all units produced in the cutting department during the month would be \$.036 per unit.

Records are maintained in the Cost Department to show the operations and their respective values expressed in terms of "B" units necessary to manufacture each part. These records are corrected from time to time as the values and operations change, upon written confirmation from the Standards Time Study Department. Exhibit 7 is an illustration of the form kept in the Cost Department.

Exhibit 7—This job form is kept by the Cost Department to show the operations required and the "B" units necessary to do each job. See text above for full explanation.

NAME	DATE	PART NO.
USED ON	SIZE STEEL	WT.
CUT FROM	ANAL.	TYPE
OPERATION OR PART NUMBER	FOUNDRY	CUTTING
		FORGE
		MECHANICAL
		SHOP
		FABRICATION
		ASSEMBLY
		HEAT
		TREAT
		CLEAN
		PAINT
TOTALS		

Exhibit 8—Structure Cards are buff in color to differentiate from a job card (Exhibit 7). The Structure Card may contain several job parts. See text below for explanation.

It is also a normal procedure to have a job set up for a structure which is composed of several or many parts. In order to distinguish a structure card from a part card, the Cost Department uses a buff color (Exhibit 8) for the structure card. The structure card is merely a summary of the parts record cards to which has been added the "B" units for fabricating the structure from the parts, or the "B" units for assembling the structure from the parts.

The "B" units for each operation are totaled by the departments and copied on to the Job Sheet (Exhibit 6). On the Job Sheet, the calculations are made by multiplying the "B" units by the "B" unit value and also by the number of parts completed on the job, to determine the total amount in dollars to be credited to Work in Process.

Procedures have been established so that a control is maintained on the "B" unit values used. The Inventory, as of the first of each year, is expressed in both dollars and "B" units. To these figures are added the month's production of "B" units, and the dollars of labor and expense which they represent. Deducted from these totals are the total dollar value and "B" units which are costed out of work in process at the end of the month. These "B" units are now contained in the parts which have been credited to Work in Process and charged to Parts Inventory. After making these calculations, we arrive at a new balance of "B" units and dollars in Work in Process, and by dividing the new balance of dollars by the new balance of "B" units, we obtain a weighted "B" unit value. However, it has been our policy not to change the unit value unless this weighted value being used is out of line. It has been our experience that the unit value will average out over a yearly period. For this reason we do not become alarmed if the "B" unit value in any one month jumps or falls to an abnormal or sub-normal value.

Following is a table which explains how we compute the weighted value:

	Units	"B" Unit Value	Dollars
Audited Inventory	1,725,296	@.0506	\$87,317.40
Produced during month....	812,363	@.0483	39,233.27
Costed out during month			
(deduction)	602,521	@.05	30,131.05
Balance	1,935,138	.0498*	96,419.62
*Weighted value			

General

The Bedaux system with the cost accounting system is a great help at inventory time. The problem of trying to determine the percentage of completion for work in process inventory is entirely eliminated. Under this system each item of work in process is tagged. The tags are then listed on inventory sheets setting forth a description of the item, part number and the last operation completed. Then the "B" units for the different operations completed are extended in columns for the particular departments where those operations were done. After the listing is complete, a total is taken of all the "B" units in work in process in each department and multiplied by the average value of the "B" unit for the previous 12 months. The departmental totals (in dollars) are added and the result is the total of labor and overhead in work in process. The material in the work in process inventory is compiled separately just the same as it would be in any other cost system. Finished products are valued at the price at which they were costed out of work in process.

The Bedaux system combined with this cost accounting system is very helpful in predetermining costs. Under many types of cost systems the actual cost of a new product is not known until after several months of sales, and when the first costs come through they may be excessive because the item was new in the production lines. With the help of the Bedaux system the cost accountant obtains the blue prints from the engineering department, has a time study engineer set synthetic standards for each manufacturing operation in the production of the new item and then by taking the number of "B" units for each operation by plant departments and evaluating these "B" units he has the entire labor and overhead costs at a basic standard cost. This total, added to the material costs, will give the entire manufacturing cost of the new piece of equipment. A selling price can then be established knowing the exact cost even before the plant receives orders to begin production. This method of predetermining the cost is of untold benefit in a company where new products are constantly brought into production and where changes in design are frequent.

The Bedaux system offers many opportunities to the cost accountant for controlling costs. For instance he may, by compiling the "B" units actually produced in running a certain job lot through the shop, find that the total does not compare with the standard number of "B" units required. This difference may be due to improper routing through the plant or to some other cause which can be disclosed by investigation and the increased cost set out and explained for the management.

The cost accountant also has the necessary information to provide the management with excess costs from idle time, tooling up, etc.

[The End]

Heavy Gauge Blow Pipe Fittings*

[Two Prong and Three Prong Junction]

By William Neubecker

THIS fourth article will cover the pattern development for the fittings F and E, shown herewith, which were reproduced from the book, Standard Practice in Sheet Metal Work, on Plate No. 10, Page 508. The principles in this problem present an interesting study, using the simplified method in triangulation, without the use of a plan and is shown on the full page pattern details marked Fig. 18 in the accompanying illustration.

Here is shown the front elevation of a long three stream-lined connection to main, in which the partitions 3-4 on either side of the center prong, hold the material apart, until the enlarged main is reached and the three air streams combine to flow in the same direction. Using connections of this type, the main at the large end should have an area equal to the combined area of the branches flowing into it, or preferably 20 per cent greater.

Computing the Area

Assume that the neutral diameters of the two side prongs in elevation are each 5 inches and the neutral diameter of the center prong 7 inches. The area of the branches and diameter of the main, can be found by using a Table of Areas of Circles. Follow the Diameter column to 5, the area of which will be found in the Areas column as 19.63. In a similar manner follow the Diameter column to 7, the area of which will be found in the Areas column as 38.48.

Then $19.63 + 19.63 + 38.48$ will equal 77.74 square inches. To this amount add 20 per cent or 15.55 inches, making a total of 93.29 square inches for the area of the main continuing. Now follow the column of areas to the number nearest to 93.29, or, say, 95. Now follow back to the Diameter column, which shows 11. Then 11 inches is the neutral diameter of the main. This rule holds good regardless of what angle or what diameters the branches may be.

Drafting the Elevation

Knowing the various neutral diameters of the fitting, the elevation is laid out full size, as shown in the pattern detail. In practice it is only necessary to draw the half elevation as shown at the right. In their proper positions as shown, de-

scribe the semi-neutral sections A-B-C of the branches and the semi-neutral section D of the main. As will be noted, no plan view is necessary. Place arrow points *a* and *b* to equalize area for each of the prongs.

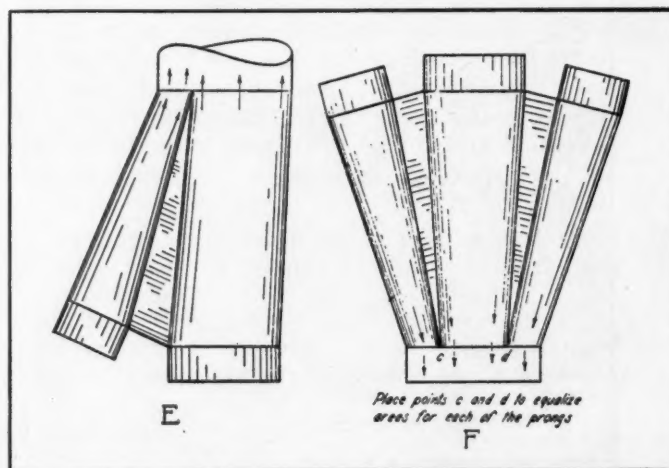
Finding True Lengths

Space one half or the quadrant of the semi-neutral section B, the half neutral section C and one half or the quadrant of the semi-neutral section D in an equal number of divisions (using more divisions in practical work) as shown by the small figures 1 to 3, 4 to 8, 9 to 14, respectively.

Now from these small figures at right angles to their respective base line draw lines to intersect the base line in B from 1° to 3; the base line in C from 4 to 8, and the base line in D from 9 to 14°. Connect these points of intersections by solid and dotted lines as shown. These lines then become the bases of sections to be constructed, whose altitudes will be equal to the various perpendicular heights shown in the semi-neutral sections B, C and D.

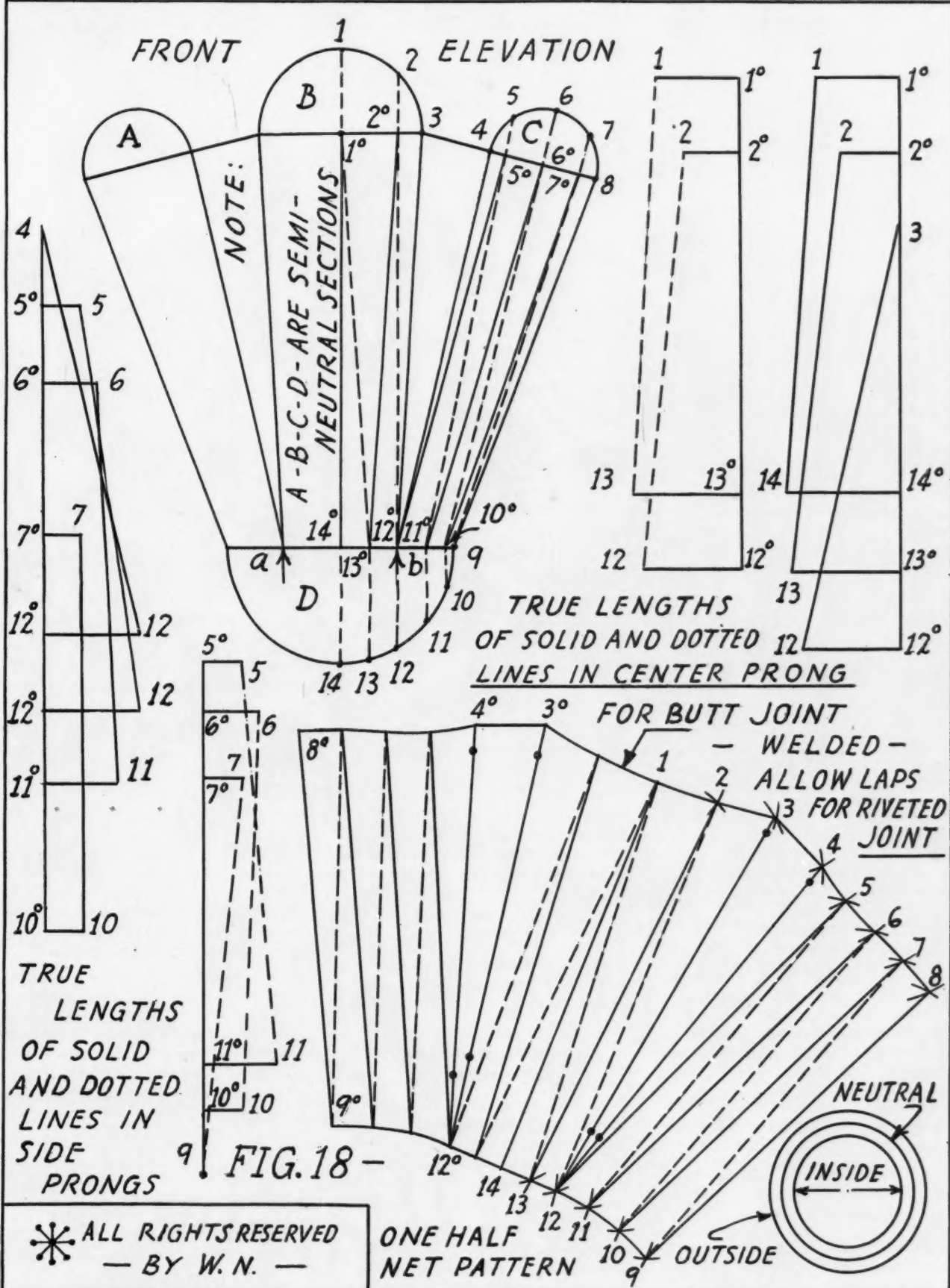
For example: To find the true length of the solid line 6°-11° in the side prong, set off this distance on the vertical line at the left of the drawing, as shown by similar numbers 6°-11°, from which points draw lines at right angles to 6°-11°, making 6°-6 and 11°-11 equal respectively to the perpendicular heights 6°-6 in the semi-neutral section C and 11°-11 in the semi neutral sec-

(Continued on Page 75)



*All rights reserved.

PATTERNS FOR HEAVY GAUGE STREAMLINE IV — CONNECTION WITH MAIN LINE — *



Equipment for converting prospects



POWERFUL, free, dealer sales helps, plus Dust-Stops* national advertising, make customers out of prospects. This FREE sales-making material is ready to work for you—NOW! Order it today!

1. Attractive newspaper ad mats:—They'll remind most every furnace owner in town that you are the Dust-Stop dealer.

2. Colorful mailing pieces:—Eye-catching sales messages to send out to all your prospects.

3. Reminder postcards:—Follow-ups for the mailing pieces. Imprinted with your name and address.

4. Radio scripts:—One-minute announcements, all ready to go on the air to boost your name and business.



5. Window and counter displays:—Attractive, strong-selling pieces that immediately identify your store as Dust-Stop headquarters.

6. Furnace labels:—They keep your name before your customers . . . put you first in line for any future furnace repair business.

Big-time national advertising, too

When you feature Dust-Stops, you tie-in with a national-magazine advertising campaign with a circulation of more than 33 million. This advertising appears in *The Saturday Evening Post*, *Life*, *Better Homes and Gardens*, and *American Home*.

Remember, old standards of wear and tear just don't go today. Your prospects realize that their heating equipment—especially oil-fired—must be kept in tip-

top shape to give maximum efficiency. And that's exactly where you fit into the picture with Dust-Stops. The 1943 Dust-Stop dealer-help campaign points all this repair, reconditioning and filter-replacement business right to your door.

So get in touch with your Dust-Stop distributor today. Tell him to show you "Pulling Profits out of the Air"—the Dust-Stop Sales Plan that is enabling hundreds of dealers to make money while rendering a real public service.

Owens-Corning Fiberglas Corporation, Toledo, Ohio. In Canada, Fiberglas Canada, Ltd., Oshawa, Ontario.

FIBERGLAS*
DUSTOP*
U.S. Pat. Off.
AIR FILTERS

Association ACTIVITIES

Forced Warm Air Conference

MICHIGAN State College announces the 12th Annual Forced Warm Air Conference to take place March 22-25, 1943, inclusive.

As we all know, heating is very closely identified with the war effort along with conservation of heating and fuel consumption. And in addition, the Conference will be a morale builder affecting both the students and the manufacturers, jobbers and dealers whom they serve, and ultimately through them the consumers of the industry. You will observe by referring to the program as outlined below that most of the subjects tie in very closely with the objective of attaining highest efficiency in warm air heating operation.

The College has now a substantial number of registrants for the short course.

The Annual Forced Warm Air Conferences have been endorsed by the National Warm Air Heating and Air Conditioning Association over a long period of years and the Association is pleased at this time to endorse the 12th Annual Forced Warm Air Conference to be held this year.

Monday, March 22

- 9:30-10:30 A.M.—Registration—Room 111, Olds Hall of Engineering.
- 10:30 A.M.—Consider the Plan and Construction of the House Used for the 1943 problem. J. Earle Maynard, Rybolt Heater Co.
- 12:00 M.—Luncheon.
Heating Problems Encountered at Army Posts, Camps and Stations. Bruce F. McLouth, Office of the Chief of Engineers, Washington, D. C.
- 1:30 P.M.—Heat loss through walls, ceilings, floors.
How will new construction affect it?
What relationship to floor area?
Effect of cold (or hot) walls on comfort. Ed Root, Superior Safety Furnace Pipe Co.
- 6:30 P.M.—Dinner—Union, ASH&VE—Western Michigan Chapter. Address—The Flow of Air and Gas in Various Systems. Sewell H. Downs—National First Vice-President.

Tuesday, March 23

- 9:00 A.M.—Heat Loss by Infiltration—Various methods of estimation. Discussion concerning treatment of basement or other unheated spaces under floor. C. H. Pesterfield, M. S. C.
- 12:00 M.—Luncheon.
Combustion, combustion tests and what you may expect from your heating plant. Jesse M. Campbell, M. S. C.
- 1:30 P.M.—Bonnet Temperatures. J. Earle Maynard.
- 6:30 P.M.—Dinner—Union.
The Influence of Atmospheric Environment on Man and His Physiologic Adjustments. Dr. F. K. Hick, Lt.-Col. U. S. Army.
The Mechanical Equipment Used in Defining the Atmospheric Environment of University of Illinois, College of Medicine. Prof. M. K. Fahnestock.

Wednesday, March 24

- 9:00 A.M.—Layout and Design of Duct System for Problem House. Ed. Root.
A Graphical Method of Duct Design. L. G. Miller.
- 12:00 M.—Luncheon.
Oil Burner Servicing—Wall Flame and Gun Types. F. M. Jordan, Timken Silent Automatic Co.
Vaporizing Types. A. Frantz, Motor Wheel Corp.
- 1:30 P.M.—Application of substitute materials to duct system as designed. Ed. Root.
Demonstration of installation of a duct system made of substitute materials on a structure. Sall Mountain Co.
Demonstration of Balancing the System for Air Delivery. J. Earle Maynard.
- 6:30 P.M.—Annual Banquet.
A Look Into the Future. National Warm Air Heating and Air Conditioning Association. Officers, H. S. Sharp, President, and Geo. Boeddener, Managing Director.

Thursday, March 25

- 9:00 A.M.—Estimating Costs of Labor and Material Using "Victory" Materials. D. H. Ruh, Sall Mountain Co.
- 12:00 M.—Luncheon.
What Research Has Shown Concerning the Heating of Trailers and Small Portable Houses with Forced Warm Air. John Miller, Motor Wheel Corp.

Not only is Great Britain an ally in this present war—but she has been since the science of heating manifested itself—because we have leaned so heavily in our calculations on the British Thermal Unit, a Btu. to you! Join the battle of the Btu's.

We believe that it is every man's patriotic duty who is connected with the warm air heating industry, to attend the Twelfth Annual Forced Warm Air Conference. Millions of warm air furnace users are looking forward to the suggestion and advice we can give them concerning fuel economy, servicing and maintenance.

Make your reservations now by addressing a letter to Professor Lorin G. Miller, Michigan State College, East Lansing, Michigan.

New York State

The New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association, Inc., has prepared and sent to all Congressmen and the United States Senators of New York State a resolution hoping for a fair deal from the Copper Recovery Corporation. Prices offered for copper and steel products by the government are below the cost to dealers and if requisitioned at the prices set by the Copper and Steel Recovery Corporation, would take our members' property at much less than the cost. The association has asked that these unfair and oppressive conditions be corrected.

The New York Association sent these resolutions to E. E. Holman, Acting Chief, Copper Program, Materials Redistribution Branch, War Production Board, 200 Madison Avenue, New York City, on November 23, 1942, and an unsatisfactory reply was received on December 4, to which the association replied on December 5 that they could see no logical reason why the Government should ask contractors to sell perfectly good sheet copper—not scrap—for less than they paid for it. Standard sizes of cold or hot rolled copper are not scrap. For instance a 6 inch copper elbow that weighs about 4 lbs. costs contractors about \$2.00 and is still good usable material—not scrap—and the government pays about 60 cents for it. There had been no reply on February 3.

State Secretary Clarence J. Meyer, in his news letter of February 22, asks members that if they believe the resolution well founded, they write their Congressmen and Senators.

Members are also invited to come to Newburgh on March 17 and 18 to attend the annual convention and voice their views on this or any other subject pertinent to our industry.

Clarence J. Meyer, State Secretary.

CONVENTIONS

1943

Mar. 17-18—New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association, Inc. Annual. Newburgh, N. Y. Clarence J. Meyer, State Secy., 567 Genesee St., Buffalo.

Apr. 21-22—Sheet Metal Contractors' Association of Illinois. Annual. Hotel Jefferson, Peoria. W. W. John, Secretary, 212 W. Main St., Urbana.



Officers and Directors for 1943. Left to right (seated)—Treasurer, Frank Kramer; Secretary, Paul Biersach; Sergeant, Herman Roesler; President, Paul Krueger. Standing—4th V.P., Louis Stefanik; 1st V.P., A. C. Mantei; 2nd V.P., Martin Schaar; 3rd V.P., J. A. Birthrong.

The Wisconsin Convention

THE 29th annual convention of the Sheet Metal Contractors Association of Wisconsin, held February 8 and 9, at Milwaukee, demonstrated that despite the customary auto transportation and with everyone busier than usual, there still remains such a pressing need for information on ways of conducting a business in the emergency that members will attend conventions despite inconvenience.

This point was amplified by President Paul Krueger, in his president's address, when he reported that all during the year officers and directors and committees gave unsparingly of their time and that district meetings and special meetings at which current problems were presented and discussed were well attended. It has been very apparent, said the president, that sheet metal and heating contractors have accepted the conditions under which they must now operate and have done their level best to conform to all the rules and regulations restricting materials and specifying how work shall be carried on. No one industry, declared President Krueger, probably has co-operated more whole-heartedly than has the sheet metal and warm air heating industry.

Post-War Planning

Howard Ellis, speaking on "After Victory, What?" declared he believed that industrial groups, similar to the Wisconsin association, are perfectly willing to do everything absolutely needed to win the war, but these same groups do not want to be saddled with socialistic reforms which do nothing to further the war effort. All industry wants to be sure that we will retain, after the war, the scale of living industry has established by technological progress.

It may be exhilarating to consider rebuilding and remaking of Europe after the war, but if the tremen-

dous tax burden industry is now carrying continues at an uninterrupted spiral, then there will be, after the war, no cushion on which industry can absorb the gamble we must undoubtedly take in rebuilding Europe.

The speaker pointed out that in this war period all industries are experimenting with new materials and new methods. Many of these materials and methods will persist after the war and will replace materials formerly used. If, however, industry is to be free, after the war, to further expand the uses of these new materials and new uses of old materials, then industry must be given encouragement and must be restricted by a minimum of regulations and taxation. In this post-war scheme of things government should be only a referee, or a guide, and should not actually be business itself. Socialistic reforms, coupled with the scores of regulatory laws which now determine what we can do as individuals and as business, can, if carried to the extreme, destroy the American way of life. Many of these problems are being placed before the American people for decision at a time when winning the war should be of paramount importance. Business believes these social changes should be held in abeyance until the war is over.

Income and Business Taxes

George Geiger, assistant chief, Field Deputy Internal Revenue Office, explained gross income tax and excise taxes, also sales taxes, luxury taxes and the Federal and state taxes which are now imposed on individuals and business. Since this tax problem is impossible to describe in the brief space of a convention report, the editors announce that these tax problems will be discussed in detail by qualified writers, month-by-month during the first part of the year.

A moving picture, "Get the Scrap," was presented by the Industrial Salvage Division of WPB. The accompanying explanation announced that some 30,000,000 tons of scrap were collected in 1942, but the need is still greater for 1943, and we need at least 13,000,000 additional tons in the first six months of 1943. As pointed out in *AMERICAN ARTISAN*, the scrap salvage program is now looking to industry for roughly 65 per cent of the usable scrap which must be turned in.

Secretary's Report

Paul Biersach, in his secretary's report, announced that directors' meetings and district meetings were held frequently throughout 1942 and at each of these meetings special problems were discussed and questions answered by authoritative speakers. Eight meetings were held in Milwaukee, and four meetings outside. At this year's convention, said Paul, the usual year-book was discontinued, but manufacturers were invited to contribute to the hospitality room which was a feature of the convention.

The Wisconsin association believes that the National Small Business Men's Association is well worth while and, accordingly, the association has enrolled as a member of the association.

Apprenticeship courses and teachers have been selected, and a program set up, and the training of apprentices will be ready to start just as soon as the Wisconsin Industrial Commission approves the program. Any contractor in Wisconsin wishing to train apprentices should apply to the Wisconsin Industrial Commission at Madison, or to the local organization of the State association.

In connection with the secretary's report, A. C. Mantei of Milwaukee, read excerpts from the report of the proceedings of the Conference of American Small Business Organization. This lengthy report by Mr. Mantei covered, in general, certain resolutions and the vote on the resolution by the Small Business Association. In view of the fact that these resolutions, in many instances, vitally concern the sheet metal contractor and warm air heating dealer, *AMERICAN ARTISAN* will publish in later issues some of the principal resolutions and the vote and will explain how this industry can participate in any move made to gain recognition for these resolutions.

Material Recovery

The redistribution of materials in inventory, as a method of getting critical materials to those firms which need materials in a hurry was explained by A. R. Reed of the Milwaukee WPB office. Mr. Reed explained that the materials redistribution branch tabulated in 1942 approximately 3,000,000 pounds of critical materials. The office hopes that all Wisconsin concerns holding inventory will furnish the Milwaukee office with a list of the critical materials which the firm does not expect to use within sixty days after filing the report. In other words, any critical materials which will not be used within sixty days should be recorded as materials for redistribution. The Wisconsin office hopes to build a card file of this material showing the material, size, grade, weight, and quantities and where the material is located. A copy of this inventory will be mailed to all concerns which cooperate with the Redistribution Program.

OFFICERS FOR 1943

President—Paul Krueger, Madison.

1st Vice Pres.—A. C. Mantei, Milwaukee.

2nd Vice Pres.—Martin Schaar, Milwaukee.

3rd Vice Pres.—J. A. Birthrong, Waukesha.

4th Vice Pres.—Louis Stefanik, Milwaukee.

5th Vice Pres.—Peter Christensen, Appleton.

Treasurer—Frank Kramer, Milwaukee.

Secretary—Paul Biersach, Milwaukee.

Sgt.-at-Arms—Herman Roesler, Milwaukee.

At the present time, a record of approximately 9,000,000 tons of critical materials is available. Any contractor requiring critical materials in a hurry can telephone, telegraph or write the Milwaukee Redistribution Branch and can find out what size, quality, gauge and quantity of material is available. Under Priority Regulation 13, this material requires a priority rating of AA-5 or better for shipment.

The office also hopes to set up a parallel card file of concerns wishing certain materials so that whenever materials are offered for redistribution, these contractors needing materials can be notified.

Controlled Materials Plan

The latest information concerning Controlled Materials Plan was discussed jointly by Louis K. McElhaney, Priority District Manager, and Walter C. Junkerman, Construction and War Housing Manager, of the Wisconsin WPB. The explanation offered paralleled closely explanations already published in *AMERICAN ARTISAN* and, therefore, it does not seem necessary to present this discussion in detail. The speakers did announce that a new repair and maintenance order was ready for release and excerpts of this new order L-41, as revised, is published elsewhere in this issue. Readers are urged to study this revised L-41.

The speakers emphasized that it is no longer permissible for Production Requirements Plan units to file separate applications for materials required for repair and maintenance of their buildings and in the future these PRP units must specify materials required for maintenance on their Production Requirements Plan application and the material will be approved or denied by WPB.

MPR-251

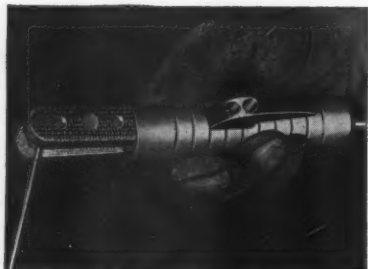
The OPA order No. 251, establishing price ceilings and procedure for all construction, repair, maintenance, service and new construction, was discussed in detail by Neil Stoddard. In view of the fact that this regulation is highly important to all readers, we publish in this issue a report of Order 251 and show the form suggested by Mr. Stoddard for filing reports on all contracts exceeding \$500.

Wisconsin extended to visitors and members its usual hospitality. And there was a buffet supper and floor show on the last night and a card party, with refreshments, opening night.

New PRODUCTS

△ 7—Electrode Holder

Jackson Products, 3162 Wight St., Detroit, is introducing a light, slender, easily handled arc welding electrode holder designed for welding operations in heating, ventilating, and air conditioning fields.



Model F-1 holder is made of special, high conductivity copper alloy, has a rated capacity of 200 amps., takes rods from the smallest up to 3/16 inch, has an overall length of 7 7/8 in., weighs 12 oz., and has mechanical or solder cable connection. It is insulated to protect the welder's eyes against flash and eliminates work spoilage that ordinarily results when a bare type holder contacts the work.

8—Plastic Housed Thor

Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago, announces a new Thor plastic 1/4-inch portable electric drill.

The grip handle, field case and gear



case of the drill are constructed of a new, tough, lightweight "Thorite."

The new drill is more compact, lighter in weight, and cooler to handle than any of previous construction.

The plastic housings will be in maroon "Thorite" for general use, although they have been an olive drab color as supplied to the Army.

• 9—No-Spat

The Midland Paint & Varnish Co., 9115 Reno Ave., Cleveland, announces No-Spat to prevent adhesion of welding spatter. No-Spat should be brushed over the seam and area where

For your convenience a number has been assigned each item. Circle the items in which you are interested on the coupon on page 73 and mail to us.

● Indicates product not listed in 1941 Directroy.

△ Indicates manufacturer not listed in 1941 Directory.

weld spatter may fall. After welding the spatter may be wiped away.

No-Spat fuses with the molten metal and maintains maximum tensile strength by floating off impurities and prevents porosity, stabilizes arc, thus minimizing rod spatter and saving much rod metal.

No-Spat is an adequate rust protector, will not freeze, and may be used over the full welding range of amperage and voltage.

10—Projection and Spot Welders

Pier Equipment Mfg. Co., Benton Harbor, Mich., has recently added Series P-50 and P-100 automatic air-operated press type welders, designed for high speed precision projection and general spot resistance welding of sheet and structural steel assemblies, wire and non-ferrous metals.



These welders are equipped with double-acting air cylinder and control valves to provide for smooth, speed action. Pressures range from 800 to 4000 pounds readily adjustable by means of a regulating valve. Die platens with "T" slots hold projection welding dies, while for spot welding operation, each welder is supplied with two 2 1/2-inch diameter by 8-inch copper horns machined to accommodate 1 1/4-inch water-cooled electrode holders, either at right angles or in offset position. Standard throat depths are 12 and 24 inches.

Series P-50 is made in two transformer capacities, 30 and 50 KVA; and the P-100 in 75, 100 and 150 KVA. The P-50's are supplied with either 4-inch or 5-inch cylinders with 6-inch and 8-inch for P-100's.



• 11—Rivet Puller

Whitney Metal Tool Company, 110 Forbes St., Rockford, Ill., offers the G-742 Rivet puller—a new tool in which is incorporated their ball-bearing feature to decrease friction and increase speed. The tool is designed so that one man can easily and quickly head up blind rivets, working from one side and without a bucking bar.

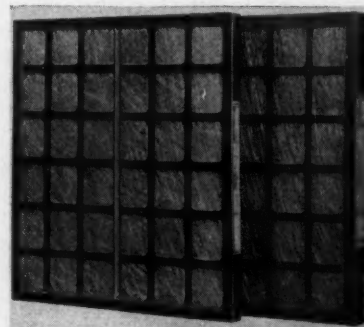
△ 12—Soldering Fluid

Farrelloy Company, Inc., 1241 N. 26th St., Philadelphia, offers Lytestone, a flux for torch soldering.

Lytestone has a minimum of residue, necessary if porosity is to be avoided in torch soldering on joints, unions, etc. Not more than 2 per cent mineral acid in Lytestone makes for less corrosive reaction.

13—War Filter

Owens-Corning Fiberglas Corporation, Nicholas Building, Toledo, Ohio, has designed a new war Dust-Stop air



filter. A square grill of heavy Kraft cardboard replaces the metal grill with round openings. A standard filter adhesive is used.

Pure "MOUNTAIN-FRESH" AIR

Clean, efficient Detroit Filters will assure your customers an abundance of pure "mountain-fresh" air in their homes.

And clean, efficient Detroit Filters will save your customers' fuel supply, a necessity in these days of fuel shortages.

Right now is the time to replace Air Filters. With the winter three-quarters gone, filters are loaded with the dirt of several months' operation. But winter isn't over. Furnaces will operate for many weeks to come.

Replace clogged filters with Detroit Filters—and build good-will and profits for yourself.

When filters need replacing, be sure to ask your local jobber for "Detroit" Air Filters, and take advantage of these desirable features.

ECONOMY—Patented cellular design gives more filtering capacity per dollar.

FREE AIR FLOW—Uniform air distribution assures free flow with maximum filtering.

DUST CAPACITY—Thoroughly impregnated with special non-dripping compound to retain dust collecting ability indefinitely.

ODORLESS—Adhesive material is absolutely odorless and will not turn rancid.

LONG LIFE—Entire thickness of filter used in cleaning, thus providing long and efficient filtering.

***STRENGTH**—Selected materials and sturdy construction prevent sagging. No danger of small particles being carried into air stream.

POLLEN—Highly effective in providing relief for persons allergic to air-borne pollen.

CLEANING—Guaranteed factory cleaning and renewal service when necessary—a further economy.

**No critical materials are used in the construction of "Detroit" Air Filters.*



Made in all standard sizes—special sizes to order.

An attractive envelope stuffer is available—imprinted with your name—a powerful stimulant for replacement filter business. If you want some to mail out to your customers, drop us a line on your letterhead.

Oil is Ammunition
USE IT WISELY!



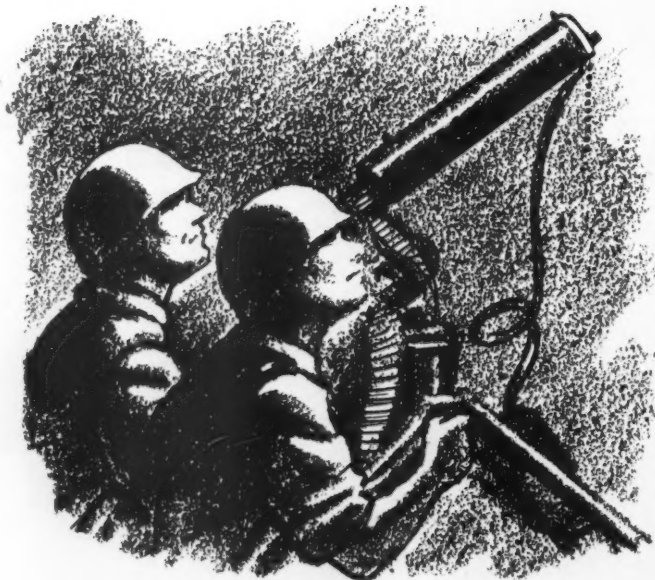
DETROIT LUBRICATOR COMPANY

General Offices: DETROIT, MICHIGAN

Division of AMERICAN Radiator and "Standard" Sanitary Corporation

Canadian Representatives—Railway and Engineering Specialties Limited, Montreal, Toronto, Winnipeg





They DARE the Japs to return to Pearl Harbor

Things are different now. Our boys are ready and anxious to meet anything the treacherous Japs may try to dish out.* Just let them start something at Pearl Harbor!

Lockformer is justly proud of the part they have been privileged to play at Pearl Harbor—Alaska—British Isles—Australia—at the home front—in helping to get the big job done *quickly* with least manpower.

For one man—with a Lockformer—can make more Pittsburgh Locks than 16 men working at 8 brakes! Think of the *speed* Lockformer contributes to our War Job—and of the number of men Lockformer releases for the fighting forces!



In addition to Pittsburgh Locks, Lockformer makes Double Seam Locks, Drive Cleats and Right Angle Flanges. And your newest apprentice can operate Lockformer like an expert in 5 minute's time!

Write or wire for the Lockformer Catalog, showing complete lines of Lockformer equipment.

The **LOCKFORMER** Co.
4617 ARTHINGTON STREET, CHICAGO, ILLINOIS

New Literature

For your convenience in obtaining copies of new Literature use the coupon on page 73.

212—New Roof Ventilator Catalog

The Swartwout Company, 18511 Euclid Avenue, Cleveland, has issued a new catalog—Bulletin 217—describing their "NCM" line of roof ventilators made of non-critical materials. The various ventilator designs are patterned after the original metal Swartwout ventilators and are for use in applications where metal is not vitally necessary.

213—Solders That Stand Up

Alpha Metal & Rolling Mills, Inc., 363 Hudson Ave., Brooklyn, N. Y., is distributing a folder entitled "Solders That Stand Up." Substitute solders, regular solders and Alpha service in soldering problems are described.

The Lead-Tin Fusion graph on the back page will be of value to anyone having solder difficulties due to the tin shortage.

214—Manual of Temperature Regulation

Marsh Tritrol Company, 600 S. Michigan Ave., Chicago, offers a new manual with information on how to reduce the consumption of heating fuel. The Marsh Tri-Trol Regulator may be sold without priorities, and stocks are available for immediate shipment.

The Marsh Tri-Trol Regulator is a heat control that automatically operates the stoker, burner, zone valve, or circulating pump according to outside temperatures. It is specifically designed to provide full automatic control for the multiple occupancy building such as a store, apartments, office building, etc. A wiring diagram is included.

215—APS Steel Roofing and Siding

Protected Steel Products Company, Pittsburgh, is distributing a 24-page catalog covering their APS Weather-Tested protected steel roofing, siding and flashing.

Weather-tests, specifications, estimating, application on wood or steel, siding, roofing, eave flashing, ridge cap, box gable, corrugated gable, window and side wall flashing, corner flashing, APS flashings, strap fasteners, girt fasteners, engineering data, sheet coverage table, table of fasteners, stocks sizes, and users are covered.

Weather-Tested compound protects the steel, while Mica protects and reinforces the Weather-Tested compound.

216—Reconditioned Ball Bearings

Ahlberg Bearing Company, 3025 West 47th St., Chicago, is distributing a 16-page book explaining the manufacturing procedure in renewing worn ball bearings, a subject which ties in very closely with the WPB conservation of parts program.

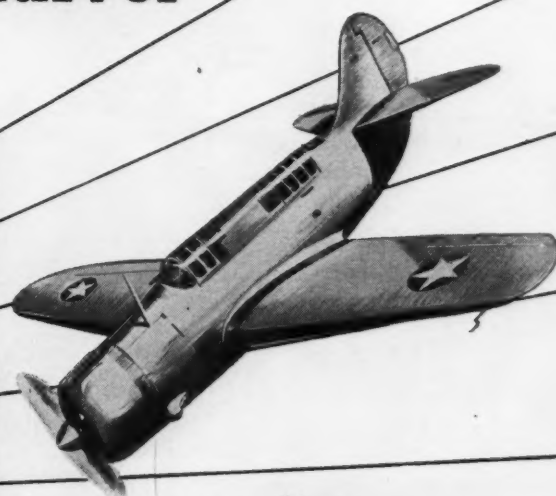
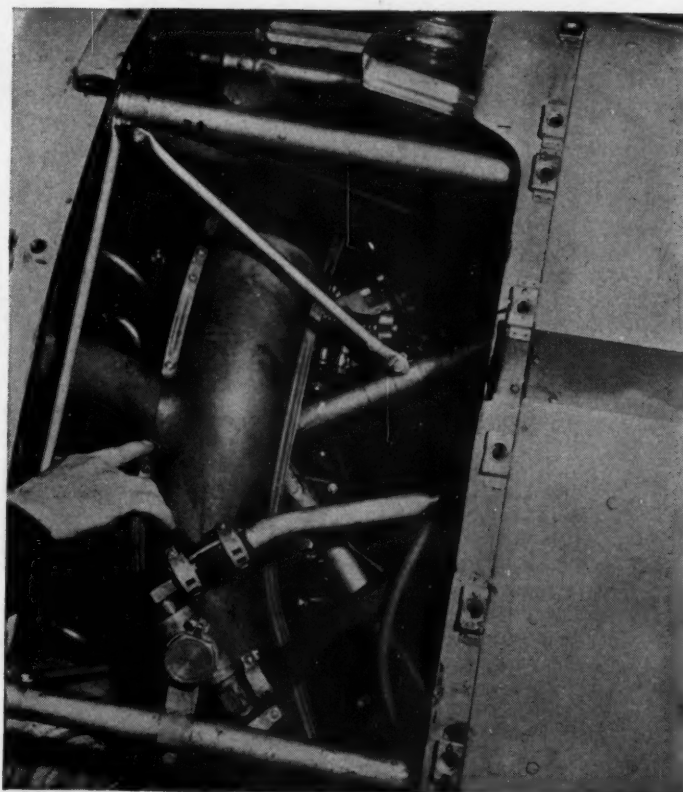
Ahlberg ground bearings consist of service proven races, perfectly ground ball raceways, new matched precision balls, new ball retainers, lubricated and moisture-proof packaged, and guaranteed bearing performance. Ahlberg ground bearings are exchanged from stock, at substantial savings upon turning in worn ball bearings.

217—Handbook on Blind Rivets

Cherry Rivet Company, Department 14, Los Angeles, California, offers a new handbook, designed to aid those concerned with riveting operations on aircraft.

Sixteen pages of charts, diagrams, dimensional sketches and photographs present a clear picture of how Cherry rivets are used for new airframe construction, field repair and airframe salvage. The book tells how to save time on riveting jobs, giving complete information on the Cherry Riveting Process together with instructions on the operation and care of Cherry Rivet tools.

What's a Navy Helldiver



got to do with a FURNACE?

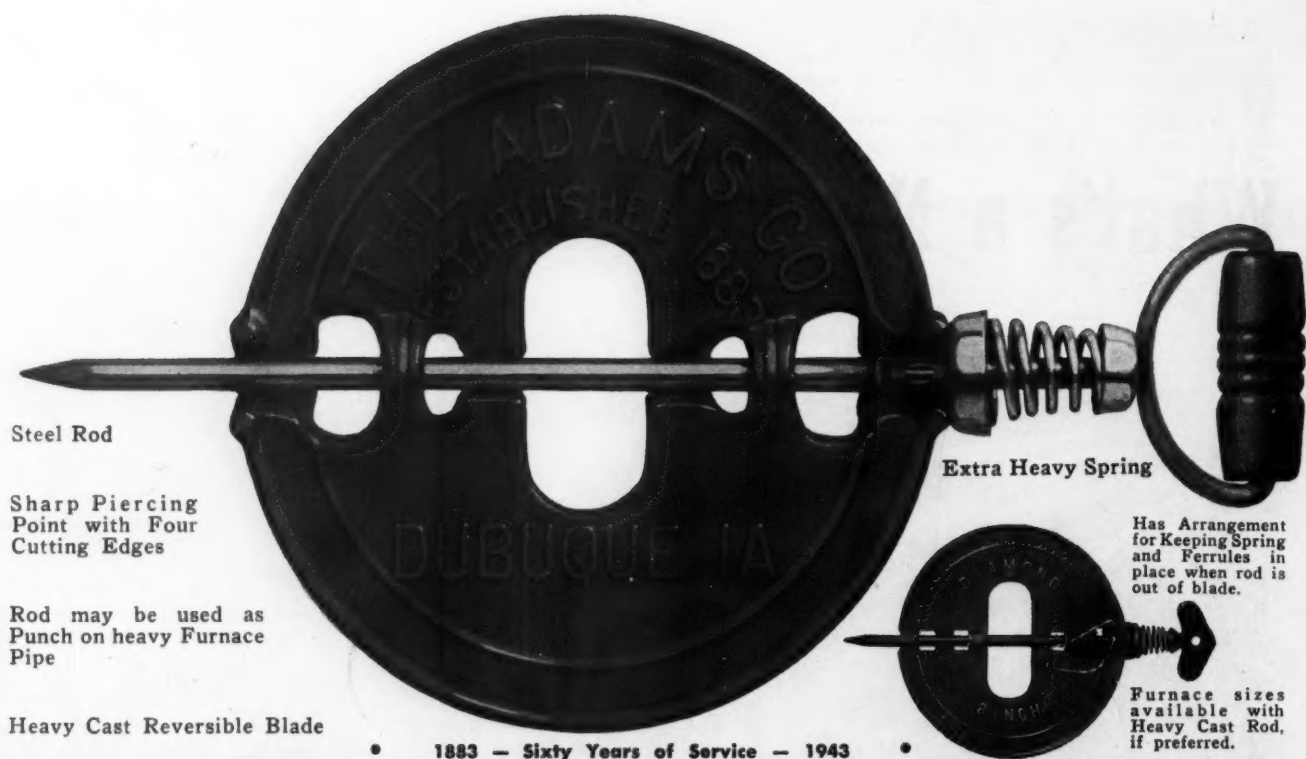
They have much in common . . . the same ARMCO Stainless Steel used before the war in furnace combustion chambers and heat exchangers now rides the sky in the nose of America's fighting planes—as collector rings and stacks for vital exhaust systems.

The terrific heat and corrosive gases from high-powered warplane motors is much too severe for ordinary metals to withstand. Yet ARMCO Stainless Steel easily endures destructive heat scaling, resists corrosion and retains its strength at high temperatures. It helps keep our pilots flying—to Victory!

The war is a great proving ground for ARMCO Stainless Steels, as well as for many other modern materials. Out of it will come important developments that are sure to bring you new opportunities for service and profit. The American Rolling Mill Company, 581 Curtis Street, Middletown, Ohio.



THE AMERICAN ROLLING MILL COMPANY



• 1883 — Sixty Years of Service — 1943 •

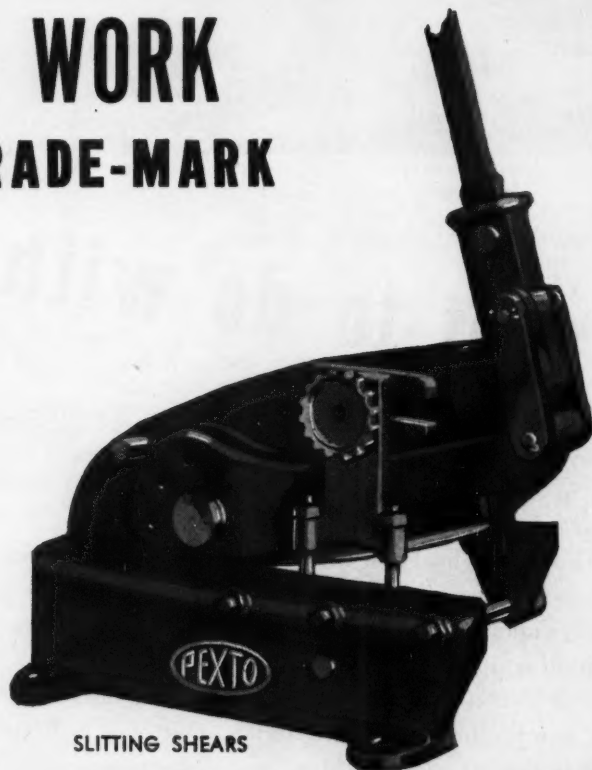
ADAMS

DIAMOND SMOKE PIPE DAMPER
MANUFACTURED BY
THE ADAMS COMPANY
DUBUQUE, IOWA, U. S. A.

**FOR SHEET METAL WORK
REMEMBER THIS TRADE-MARK**



PEXTO has grown up with the Industry . . . has pioneered in the development of equipment to meet its changing needs. The PEXTO Trade-mark will always be your assurance of correct design, sound materials and fine workmanship.



SLITTING SHEARS

THE PECK, STOW & WILCOX COMPANY

SOUTHINGTON, CONNECTICUT, U. S. A.



A PROTECTED STEEL SHEET

Special slate-pitch coating makes it moisture-proof, weather-proof and will resist heat up to 230° F. Will not crack or peel. Meets government specifications.

CHENEY "Protected" METAL is tough. It can be sheared, bent in hand brake, Pittsburgh locked, mallated, riveted and worked with regular shop tools.

Forms easily into warm air heating or ventilating ducts, flashings, valleys, metal roofs, downspouts, and all general sheet metal work.

AVAILABLE FROM STOCK

Cheney Protected Metal Sheets, 26 to 18 gauge, 28"-30"-36" wide by 96" and 120" long.

Corrugated Roofing, 26 gauge, 26" and 27½" wide x 96" and 120" long.

Conductor Pipe, 26 gauge, 3" and 4", plain round, round corrugated, square corrugated.

Gutter, 26 gauge, 3"-4" and 5", single bead lap joint.

Elbows, 26 gauge, 3" and 4".

2V Crimp Roofing, 26 gauge, 26" and 28" wide.

3V Crimp Roofing, 26 gauge, 25" and 27" wide.

Weatherboard, 26 gauge, 24" x 4", clapboard 96" and 120" long.

Cheney Flashing Thru-Wall, 26 gauge, (3-way bond).

Cheney Reglet, 26 gauge, 48" long.

Cheney Pitch Paint • Cheney Undercoater.

We can furnish material for maintenance and repair. Consult your nearest distributor and ask about the new low priority requirements. Send for samples and full information.

SOLD BY THE FOLLOWING EXCLUSIVE DISTRIBUTORS:

BALTIMORE: Lyon, Conklin & Co., Inc.

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CHENEY METAL PRODUCTS CO.

Trenton, New Jersey

for

FUEL ECONOMY

in Peacetime . .

FUEL CONSERVATION

in Wartime . .



DEPENDABLE

Oil Control Valves



Economy or CONSERVATION — They both mean SAVING FUEL . . . One a peacetime "sales advantage"; the other, a wartime Necessity and a definite aid to victory. . . .

A-P DEPENDABLE CONTROLS are helping thousands of families to healthful, economical heating, in spite of fuel rationing. For manufacturers of the leading Oil Burning Circulating Heaters were wise enough long before the war to STANDARDIZE of A-P Controls for accurate, dependable and economical fuel control — proven ability to get every last degree of heat possible from every ounce of fuel.

Retailers, alert merchandisers looking ahead for post-war sales, will keep in touch with their customers now using A-P Controlled Heaters. They'll find SATISFIED users who have proved the advantages of A-P Controls — and will be ready to buy the new post-war heaters using them. And, of course, A-P Controls will be even better — engineered and built on new knowledge, continuing research.

AUTOMATIC PRODUCTS COMPANY

2452 NORTH THIRTY — SECOND STREET
MILWAUKEE WISCONSIN





**FOR LOW-COST HEATING, QUICK INSTALLATION
AND METAL CONSERVATION**

DIRECTHERM UNIT HEATERS STOKER-FIRED

It is a self-contained unit and can be installed or moved in a few hours. No duct work, radiators, or pipes are necessary.

To tend a Directherm requires a minimum of attention. Once the automatic controls are set, they need not be changed. An unskilled man can take care of it . . . important in these days of labor shortage.

Made in 6 sizes (300,000-1,700,000 BTU).

A I R T H E R M

MANUFACTURING COMPANY

706 S. SPRING AVE. • ST. LOUIS, MO.



Niagara 18 Gage Foot Operated Shears with 96 inch and 120 inch cutting lengths are ideal for sheet metal shops and maintenance departments requiring long sheets. Easy foot operation is the result of the design of every working part. Treadle extends the full length of the shear and is accessible at any location when cutting large sheets. Holddown is operated by self-locking eccentrics, thus enabling operator to let go of holddown handles while pressing the treadle. Ball-bearing, self-measuring, parallel back gage is standard equipment. Write for Bulletin 80-D. Niagara Machine & Tool Works, 637-697 Northland Ave., Buffalo, N. Y. District offices: Cleveland, Detroit, New York.

New Literature

For your convenience in obtaining copies of new Literature use the coupon on this page.

218—Tools for Punching, Forming, Riveting

Whitney Metal Tool Company, 110 Forbes St., Rockford, Illinois, is distributing a new catalog of aircraft tools for punching, forming and riveting. Two new tools, the G-742 Rivet Puller and the No. 247 bench type press brake are shown.

219—Welding and Brazing Alcoa Aluminum

Aluminum Company of America, Pittsburgh, has completely rewritten their welding booklet, and in addition to welding, it incorporates the art of brazing. The booklet is intended to help conserve aluminum and speed up vital production. It explains how to correctly use and work the metal.

220—New Improved A-R-A Sheets

Grant Wilson, Inc., 4101 W. Taylor St., Chicago, is distributing a 16-page, 3½x6-in. booklet, with space for dealer imprint, describing the new, improved A-R-A sheets to be used as an alternate or substitute for sheet metal. These sheets are asbestos protected on both sides and permanently finished in a new neutral coloring to harmonize with any surrounding, or they may be repainted with any oil paint.

221—Controls for Fuel Conservation

Combustion Equipment Division, The Hotstream Heater Co., 8007 Grand Ave., Cleveland, is distributing a 16-page booklet on the selecting of controls for fuel conservation with suggestions for the selection of automatic controls and instruments for natural draft coal firing, automatic stoker firing, natural draft oil burning, forced draft hand firing, chain grate and spreader stokers for heat and power, by M. W. Crew—member of the Technical Advisory Committee, Temperature and Combustion Control, War Production Board.

222—Useful Facts About ARMCO Zincgrip

The American Rolling Mill Co., 750 Curtis St., Middletown, Ohio, is distributing "Useful Facts About Armco Zincgrip" intended to be helpful in promoting the efficient use of sheet metal.

A special section describes the savings in material, time, labor and storage space to be gained by using Armco Zincgrip in coils, instead of regular galvanized sheets. Other sections deal with specifying, ordering, physical properties, deep drawing, roll forming, brake forming, welding (metallic arc, carbon arc, oxy-acetylene and spot), cleaning and recoating welded joints, soldering and finishing.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

7	8	9	10	11	12	13
212	213	214	215	216	217	218
219	220	221	222			

Name

Company

Address

Are you Manufacturer—Jobber—Dealer—

Victory Metal

*One medium Tank
requires almost
one-half ton of copper*

HUSSEY COPPER

GOES WHERE

VITALLY NEEDED TODAY!

Ounces of copper, here—pounds of copper, there . . . every application vital to total tank performance!

Copper is fundamentally required in thousands of certain special war uses. Uniform and easily workable HUSSEY COPPER is a "front line" menace to the enemy and truly lives up to its reputation as a Victory Metal.

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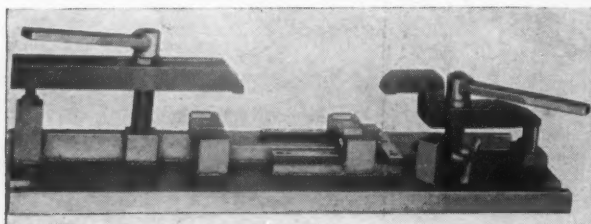
(Division of Copper Range Co.)

Rolling Mills and General Offices: Pittsburgh, Pa.

Warehouses in Principal Cities

WHY NOT GET THIS BUSINESS?

Equipped for Lincoln arc welding, you can serve overloaded factories, contractors, farmers and home-owners with profitable maintenance and repair work. For example:



Build Special Equipment such as this machining fixture. You can overcome handicap of steel shortage by using scrap material.



Build Up Worn Parts such as this gas producer skirt, surfaced with "Abrasoweld" Electrode in 3.6 hours, saving \$87 and a 406-lb. casting. There are 1001 jobs such as this to increase your income, improve your reputation and help win the war.



Valuable Ideas on arc welding procedure are contained in the 1308-page "Procedure Handbook"—"Bible" on all phases of arc welding design and practice. 1810 illustrations. A \$5.00 value for only \$1.50 postpaid in U. S.

THE LINCOLN ELECTRIC COMPANY
Cleveland, Ohio

Largest Manufacturers of Arc Welding Equipment in the World

Obituaries

Martin Schiff, Chief Engineer of the Century Electric Company in St. Louis, died suddenly on February 15, 1943. He stayed at the Century plant until after the usual quitting time and, although not feeling well, drove to his home where he passed away at 8:30 p. m.

Before joining the Century organization in 1933, Mr. Schiff had previously been Assistant Chief Engineer and Assistant to the President of the Imperial Electric Co., Akron, Ohio from 1929 to 1933. During the years from 1916 to 1919 he served in the U. S. Navy as a Lieutenant. He was a fellow member of A.I.E.E., a member of the Engineers' Club of St. Louis and was mentioned in "Who's Who in Engineering," 5th Edition.

He is survived by his wife and a son and a daughter.

William Francis Cook, the 76-year-old father of William C. Cook, Cook's Sheet Metal Works, 8512 South Racine, Chicago, died on January 20. Mr. Cook was still helping in the office most days. He was known as "Pop" Cook to scores of men in the industry in Chicago.

James E. Rutherford, 103, who as a young man lived in Pennsylvania where he knew John D. Rockefeller when Rockefeller was a young man working in the oil fields, and who spent 65 of his years in Akron, Ohio, operating a tin shop and hardware store, died recently following a fall and a broken hip. Mr. Rutherford would have been 104 on June 18. He leaves three sons, and a daughter, three grandchildren and four great grandchildren.

Mr. Rutherford answered the first call for volunteers in the war between the states, campaigned for President Abraham Lincoln, and made the first tin containers used by Rockefeller for shooting oil wells.

"We Do a Nice Volume Now—Thanks to CLARAGE EQUIPMENT"

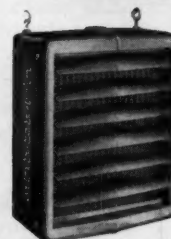
War plants, army barracks and other vital war-time buildings need heating and ventilating, or exhaust and blow pipe installations. This high priority business can be your salvation. Specify Clarage Fans, Blowers, Unit Heaters! Nationally known and Nationally accepted, these highest quality air-handling products help you land the desirable jobs. Write today for descriptive literature.



EXHAUST FANS



VENTILATING FANS



UNIT HEATERS

COMPLETE
AIR CONDITIONING
• COOLING
• VENTILATION
• FACTORY HEATING
• MECHANICAL DRAFT
FANS and BLOWERS
for INDUSTRIAL NEEDS

Clorage Fan Company Kalamazoo, Mich.
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

Neubecker— Pronged Junction

(Continued from Page 60)

tion D. Draw a line from 6 to 11 in the true length diagrams at the left, which will be the true length of the solid line 6°-11° in the right prong in elevation.

To find the true length of the solid line 3-12° in the center prong in elevation, set off this distance at the right as shown by similar numbers 3-12°. From 12° at right angles to 3-12° draw the line 12°-12 equal to the perpendicular height in the semi-neutral section D. As the point at 3 in elevation has no height, then simply draw a line in the true length diagrams at the right from 3 to 12, the desired true length of the solid line 3-12° in elevation.

Proceed in this manner until all of the true lengths of solid and dotted lines are obtained. By following the numbers in the diagrams of true lengths for both center and side prongs and comparing them with similar number in elevation, they can be easily checked up.

Developing the Pattern Shape

The pattern shape can be laid out in one, two or four pieces, according to its size. The development shown is one-half net pattern and is laid out as follows: Take the length of the solid line 1-14 in the center prong true length diagrams at the right and set it off in the pattern on the line



Each day thousands of Vitroliner Chimneys give satisfactory service in Defense Houses thruout America.

They are built of the highest quality materials by the pioneers of vitreous enameled chimneys.

The "know how" of Vitroliner is backed by 14 years of engineering development and research.

Defense House builders — write for literature.

CONDENSATION ENGINEERING CORP.
2515 ARCHER AVENUE • CHICAGO, ILL.

Power Heaters

FROM 300,000 to 2,800,000 B.T.U'S PER UNIT

—TODAY THEY'RE WORKING FOR UNCLE SAM

• TOMORROW THEY'LL MEAN PROFITS FOR YOU



Bertossa Power Heaters are today working overtime heating army camps, navy bases, hospitals, utility buildings, etc., for United Nations forces all over the world. And here at home they are being specified by heating engineers and architects for homes, churches and industrial buildings.

This popularity is due to (1) compactness of complete blower and heating unit; (2) down draft flue for increased efficiency; (3) 90% direct heating surface and (4) adaptability for complete air conditioning.

From every standpoint the Bertossa has proven its effectiveness on the job—and likewise its profit opportunities to live-wire dealers.

Bertossa

JACKSON & CHURCH COMPANY, SAGINAW, MICHIGAN

IT'S WISE TO SELECT WAGNER MOTORS FOR ALL ESSENTIAL REQUIREMENTS



Type RP, Squirrel-Cage Polyphase Motor. Because of a simple construction they are low-priced, easily installed, and exceptionally sturdy and dependable. 1/6 to 400-hp.

No matter what type of air-conditioning equipment is involved... whether large or small... regardless of the torque, speed or current requirements, you can choose a motor from the Wagner line that is correctly engineered for the job. The Wagner motor illustrated is only one of the many types of motors most frequently used for air-conditioning appliances. Each motor has special electrical or mechanical characteristics that make it the ideal motor for certain applications.

Wagner motors have many outstanding features, a few of which are given below—

- ✓ **CORRECTLY ENGINEERED.** The performance characteristics of Wagner motors meet the exacting requirements of all types of air-conditioning equipment. High starting-torque overcomes inertia and starts heavy initial loads... low starting-current reduces tendency of lights to flicker when starting... high full-load efficiency means low power bills.
- ✓ **QUIET OPERATION.** Dynamically-balanced rotors, accurately-machined end-plates, diamond-bored bearings—these and other important engineering features assure quiet, smooth operation.
- ✓ **STURDY CONSTRUCTION.** Stator frames are made of rolled steel—strong and rigid—will not get out of alignment. The well-insulated and carefully treated windings are securely wedged in place. The bases are formed from steel plate and are electrically welded. Motors are interchangeable with other types of the same frame size.
- ✓ **LOW MAINTENANCE.** Because of careful engineering, skillful workmanship, and high-grade materials, Wagner motors require no maintenance other than periodic inspection and oiling.
- ✓ **CAREFUL INSPECTION.** All motor parts and completed motors are carefully inspected, and must meet the specifications of recognized electric motor standards—an assurance to users that Wagner motors are free from defects, and will operate without attention for many years.



★ ★ ★ ★

Send for Free Bulletins

Bulletins MU-182 and MU-183 contain information that is necessary in the selection of the right motor for the job.

MAS-6

Wagner Electric Corporation

ESTABLISHED 1891

6400 Plymouth Avenue, St. Louis, Mo., U. S. A.

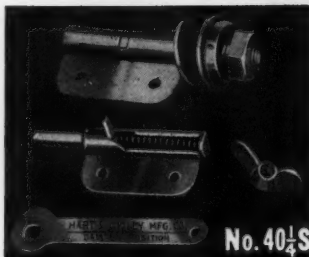
ELECTRICAL AND AUTOMOTIVE PRODUCTS

shown by 1-14. With the division 14-13 in the semi-neutral section *D* as radius and 14 in the pattern as center, draw the short arc 13, which intersect by an arc struck from 1 as center with a radius equal to the dotted true length 1-13 in the center prong true length diagram at the right. Now with 1-2 in the semi-neutral section *B* as radius and 1 in the pattern as center, draw the short arc *h*, which intersect by an arc struck from 13 as center with a radius equal to the solid line true length 2-13 in the center prong true length diagrams. Proceed in this manner until the solid line 3-12 in the pattern has been drawn.

With the partition line 3-4 in elevation as radius and 3 in the pattern as center, describe the short arc near 4, which intersect by an arc struck from 12 as center with the solid line true length 12-4 in the side prong true length diagrams at the left as radius. Proceed until the line 8-9 in the pattern is drawn, which is equal to 8-9 in elevation its true length. Trace the outline in the pattern from 1 to 3 to 4 to 8 to 9 to 12 to 14, which shows the one-quarter net pattern shape, which can be traced opposite to line 1-14 as shown by similar numbers on the left. This completes the half net pattern for butt joint welded. The heavy dots in the pattern on lines 12-3 and 12-4 indicate where bends must be made when forming up this streamlined fitting. If riveted joints are desired, add laps for riveting.

This method of development is also applicable for the two pronged fitting shown in diagram *E* on Plate No. 10, above referred to.

H&C DAMPER REGULATOR SETS



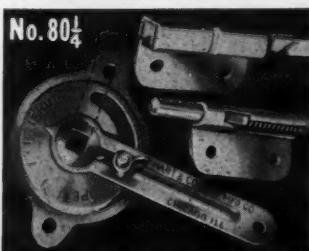
ECONOMY TYPE. Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with 1/4" bearings.

LIST PRICE.....No. 40 1/4 S....\$0.30



BRACKET TYPE. Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on 1/4" size, Solid Bearing on 3/8" size. Each set individually packaged.

LIST PRICES.....No. 50 1/4.....\$0.40
No. 50 3/8.....\$0.60



DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on 1/4" size, Solid Bearing on 3/8" size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80 1/4.....\$0.40
No. 80 3/8.....\$0.60

See your jobber or write for literature and sample.

HART & COOLEY MANUFACTURING CO.
HOLLAND, MICH. • PHILADELPHIA OFFICE: 1600 ARCH ST.

Simpler But Better Gravity Systems

(Continued from Page 43)

12. *Sizes of Ducts, Grilles, and Joist Linings for Return-Air Systems.*—For the purposes of standardization, the diameters of return-air ducts were limited to the eight shown in the second column of Table 12. The approximate areas of shoe connections, metal grilles, joist linings, and rectangular ducts required for each of the eight return duct sizes are also shown in Table 12. In all cases, the full cross-sectional area of the return duct was maintained all the way from the grille to the return-air shoe at the furnace. The commercial sizes shown in Appendix A, for each of the eight units indicated by Units Nos. 31 to 38 inclusive, were selected to conform approximately with the requirements shown in Table 12, and the methods for applying these tables to the design of a system are discussed in Appendix A which will follow.

Women Welding Graduates

The first class of women welding students ever graduated from the 25-year-old Lincoln School of Arc Welding, Lincoln Electric Company, Cleveland, received diplomas Friday, January 29th. After teaching arc welding to more than 20,000 men, the school opened its first course to women on January 4th. Thirteen women completed the 4-week course. The graduation exercises were held at the school.

PERFORATED METALS

ARE ESSENTIAL



They are used in the processing of grain, food, chemicals, ore, coal, rubber, petroleum and many other products.

Our range of sizes is great and we aim to meet the most exacting demands.

Write us for information.





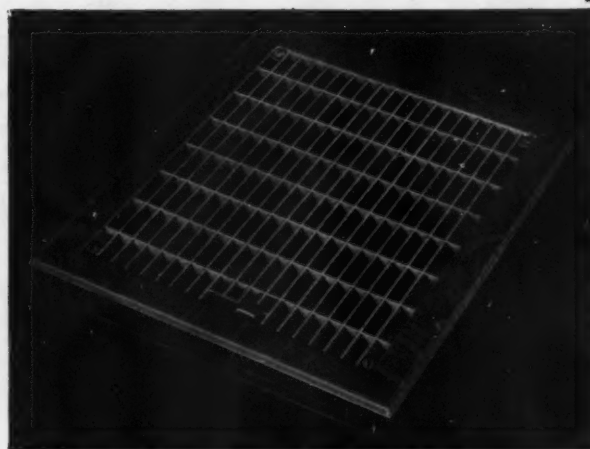
5649 Fillmore St., Chicago, Ill. New York Office, 114 Liberty St.

A REPORT on the Register Situation

At this writing the production of registers for civilian use is not permitted by W.P.B. Order M-126. We are hopeful, however, that before this message is read the manufacture of registers will again be permitted.

In the meantime our stock of standard items is in fair assortment. We are still very much in the register business and will appreciate your orders as always.

We are well aware of our responsibilities in the war effort and are producing war materials on a twenty-four-hour day basis. But we are also keenly aware of our responsibilities to those loyal customers who have contributed so much to making H&C the unquestioned leaders in the industry, and will do all within our power to serve the trade to the fullest extent that war demands and government regulations permit.

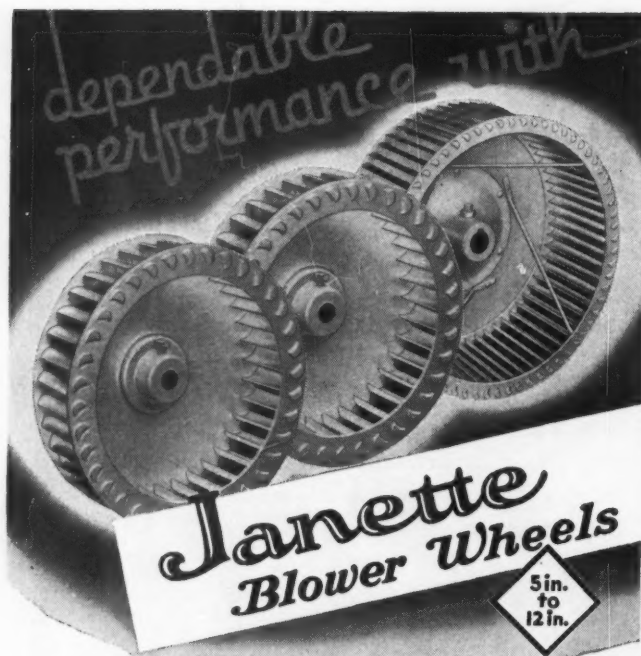


NO. 210 "NO-FLEX" FLOOR REGISTER
The finest floor register
by any comparison.

Current catalog on complete line of Gravity and Air Conditioning Registers and Accessories is No. 42.



HART & COOLEY MANUFACTURING CO.
World's Largest Manufacturers of
Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN



DISTINCTIVE FEATURES — The soft steel blades are made in pairs, pressed thru slots in the heavy steel back plate, then welded to the plate. The blade tips are pressed thru slots in the inlet disc then bent back against the spring of the steel blades. This patented construction results in an exceptionally rigid wheel and prevents loose blades, as no rivets are used in fastening the blades. The heavy cast iron machined hub is riveted to the back plate and will not crack or become loose on the shaft.

Janette

Janette Manufacturing Co. • 556-558 W. Monroe St. • Chicago, Ill.

ATH-A-NOR

**FURNACE
REPAIR
PARTS**



**COMBINE
QUALITY
EFFICIENCY**

Ath-A-Nor Furnaces manufactured by the May-Fiebeger Company for the past 50 years have proved their ability as economical and efficient heating plants in thousands of homes throughout the country.

In these days of conservation, you should check all furnaces. Replace all parts that impair efficiency, and make certain that they operate perfectly. When ordering repair parts for Ath-A-Nor furnaces order them from May-Fiebeger. They will operate as efficiently as the original parts and assure longest wear. Remember . . . Ath-A-Nor Furnaces for the "MUST" replacements . . . and Ath-A-Nor Repair Parts for easiest installation and highest efficiency.

MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS

MAY-FIEBEGER COMPANY

NEWARK

OHIO

Kruckman— Small Business Situation

(Continued from Page 35)

If you give Congress your active and sound support by sending advice and counsel to your Representative and your Senator, and by communicating with the Murray Committee and the Patman Committee and other Committees, you will receive materials and fabrications for non-war civil commerce, and you will get better breaks in getting a share of some of the war work. It is the fashion, at least here, to be doubtful about the activities and the sincerity of this Congress. You may depend upon its honesty and upon its utter sincerity. It is eager to win the war, and it is more than eager to recapture some of the privileges and rights you have lost, and which it holds fervently you should again possess without jeopardizing the War program.

Navy Is Tepid to Small Firms

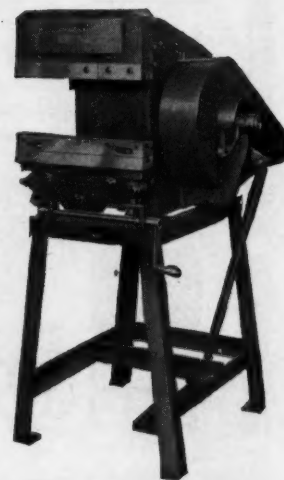
Navy, as already noted, has the reputation of being very tepid about smaller business. It definitely prefers big plants and big business men. Army, on the other hand, markedly is helpful to smaller business. The Small Business Committees of Congress pin much faith on Army in their hope of stirring up large volumes of work for smaller plants. The Army has a Small War Plants Branch which heads into the Services of Supplies commanded by Gen. Brehon Somervell. Somervell is an unusual man with vast driving energy and a good sense of industry. He cares little about social

WHITNEY-JENSEN PRODUCTS 30 YEARS EXPERIENCE

18" PRESS BRAKE

**CAPACITY, 14 GA. IRON
72 STROKES PER MIN.**

This new machine was specially designed to meet the need for a small power-driven press brake for moderate-sized work in jobbing and production shops. It is powerful, extremely sturdy, fast, easy to adjust, accurate, and has a number of features which make it one of the most practical machines ever built for bending and forming. Specifications include 1" length of stroke, 1" adjustment, 1 h.p. motor, 11½" throat height, 6¼" throat depth. Ram and die shoes are machined to take ½" tongues on standard dies. This machine is backed by Whitney's many successful years of experience in the metal-working field.



Write for new
Whitney-JENSEN
Aircraft Tools Catalog

WHITNEY METAL TOOL COMPANY

91 FORBES ST.

• ROCKFORD, ILL.

philosophies or economic doctrines or politics. He holds fast to the fundamental idea that a Total War is largely won by proper organization of supplies. His single-minded philosophy is to secure the supplies as quickly and as well-made as possible, and to send them swiftly where they must be used to defeat the enemy.

Army Must Use Small Firms

Somervell is the kind of man who sees the point of Sen. Murray's thought that ALL shops and plants must be used in order that we have the utmost production. Somervell had great faith in Eberstadt's program. Obviously the Army has immense sums to spend for prime contracts and for subcontracts. There is an Officer of the Small War Plants Branch in every Service of Supplies Office in every district or regional headquarters scattered around the United States. He will welcome any person who offers the hope of performing some of the Army work. At this moment they seek those who can help to liquidate the current bottleneck which includes the manufacture of valves, pumps, fittings, bearings, and numerous other things they denominate as critical compounds. They have just issued a pamphlet with many details about Army needs, and about methods of securing contracts. You can get the pamphlet by asking for it at the nearest Small War Plants Branch of the Army, or by writing to the Small War Plants Branch, Services of Supply, Attention Mr. Ray McCarthy, War Department, Pentagon Building, Washington, D. C.

The much criticized Smaller War Plants Division of the WPB has a new head. Lou Holland, the man

1. Cut Any Shape
2. Cut Any Size Sheet
3. Sizes from 18 Gauge to $1\frac{1}{2}$ "



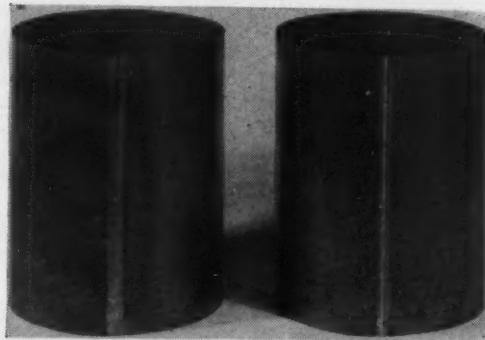
No. 18
Hand
Power

Speed Up PRODUCTION!

Here's just the Shear that offers every feature you want. It does hundreds of odd shearing jobs better and faster—yet is an inexpensive hand operated tool. Send at once for Shear Bulletin. It gives all details of the Marshalltown line of sizes from 18 gauge to $\frac{1}{2}$ inch capacity.

**MARSHALLTOWN
THROATLESS SHEARS
MARSHALLTOWN MFG. COMPANY**
920 Nevada Street, Marshalltown, Iowa

BLACK IRON Soldered WITH SUBSTITUTE SOLDER!



Sweat job used ordinary flux.
Note uneven flow of solder—
mealy appearance.

Sweat job using LYTESTONE
Flux. Note even flow of solder
—homogeneous appearance.

LYTESTONE Soldering Flux is compounded to give maximum action in removing surface oxides.

LYTESTONE has a powerful scavenging action on substitute solders—absolutely necessary where tin content has been reduced.

LYTESTONE is a concentrate powerful enough to solder on black iron.

LYTESTONE Flux lowers surface tension of molten solder—increasing fluidity of the metal—causing it to spread rapidly.

LYTESTONE does not oxidize under higher heat necessary for substitute solders—flux residue reduced to a minimum.

LYTESTONE can be carried on top of metal bath for dip soldering.

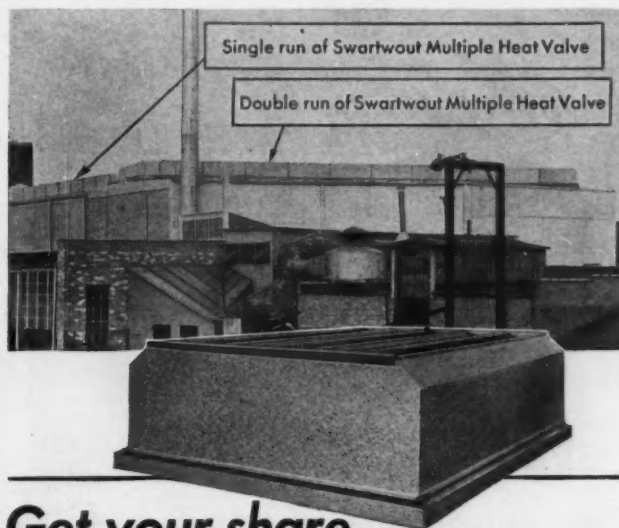
Sample gallon only \$1.75 F.O.B.

FARRELLOY COMPANY, INC.

1241 N. 26th STREET

PHILADELPHIA, PA.

Makers of FARCO Fluxes for soldering, welding and brazing.
Consult us if you need U. S. Specification Fluxes.



Get your share of this profitable business

Overcrowded war-busy plants need more ventilation. Give them quick relief with this new revolutionary gravity ventilator—the **Swartwout Multiple Heat Valve**

Easy to install on old or new buildings. Provides large scale weather-proof ventilation. Write for Bulletin 214 and contractors' prices. THE SWARTWOUT CO., 18615 Euclid Avenue, Cleveland, Ohio

Swartwout VENTILATION
SPECIALISTS



**WRAPPED UP
in a package . . .**

Everything **YOU NEED FOR SAFE, SILENT
AUTOMATIC CONTROL OF GAS-FIRED BOILERS,
WARM AIR FURNACES, ETC.**

This General Controls T-30 Gas Heating Package Set is one of the most popular of America's most complete line of automatic gas heating package sets. It includes a humless Type K-3B Gas Valve, the new, handsome T-70-1

Trimtherm, transformer, and 30 feet of wire. Night shut-off and heat anticipation available. Similar sets are available for wall and radiant heaters and gas-fired steam radiators and also for use with butane gas.

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GENERAL CONTROLS

801 ALLEN AVENUE • GLENDALE, CALIFORNIA
Branch Offices: Boston • New York • Philadelphia • Cleveland • Detroit • Chicago • Dallas • San Francisco

Modern Beauty
with Highest Efficiency

**U.S.
No. 40
★**

SERIES



Worth Noticing for Present Defense Housing
and Remembering for Post-War Gravity
Heating Installations.



**UNITED STATES
REGISTER CO.**

BATTLE CREEK, MICHIGAN

Minneapolis
Kansas City

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New York

San Francisco

Producers of Gravity, Air-Conditioning,
and Ventilating Registers, Grilles, Pipe, and Fittings. Write for
41G, 41AC, and 41F Catalogs.

from Kansas City, a typical smaller business man, resigned in disgust. Holland is a breezy and earnest soul. He came here to do a real job. But he ran full tilt into the yielding resistance that was even too much for the much more experienced Odium. It is very much like the kitten gets all tangled up in the skein or silk or wool. In this case most of the bystanders help to put more tangles in the skein.

25 Billion Dollars for Small Shops

The new head, Col. Robert Johnson, a business man, came from the Army. He is head of Johnson & Johnson, one of the great chemical concerns in the country. At this writing he has yet to win the confidence of the Committees in Congress, and of the smaller business people. It is only fair to suggest that Col. Johnson has just begun, and that he should have a reasonable chance. He announced the other day there is more than \$25,000,000,000 in contracts that may be distributed among smaller business plants and shops, and that it will be put into circulation quickly or he will use the powers given his agency by Congress to force the distribution of contracts and subcontracts. Apparently he plans to spread the contracts and subcontracts widely. The plan seems to be to place the contracts in those areas where going businesses may draw upon labor reserves, or in those areas which definitely have large surpluses of labor and have no war work.

Sheet Metal Still Over Plentiful

The Smaller War Plants Division emphasizes that it does *not* make contracts. It acts as the broker between the Government agencies and the contractor. It works with the agency to reduce the contract to the proportions that will enable the smaller business man to handle some of it. Apparently the SWPD people are caught between the grindstone of a grimly purposeful Congress and a stubbornly reluctant group of Government procurement agencies which are impatient over the necessity of doing business with smaller units.

The SWPD people say that 8 out of every 10 contract seekers who come to their offices are engaged in woodworking or in some form of sheet metal work. Occasionally the applicant fits a job, but usually they work with the lighter gauges that cannot be adapted to the war work needs.

Bear in mind, despite the muddle and confusion and uncoordinated separation between agencies and parts of agencies, they think here there are thousands of things your industry can make that must be made to keep the domestic economy from collapsing. No one knows quite yet what these things are, or how the material may be obtained, or how you will get the help. But they feel certain that somehow the need, and the pressure of public sentiment reflected in Congress, will soon throw some of this non-war production into gear.

Robinson Furnace Co. in New Home

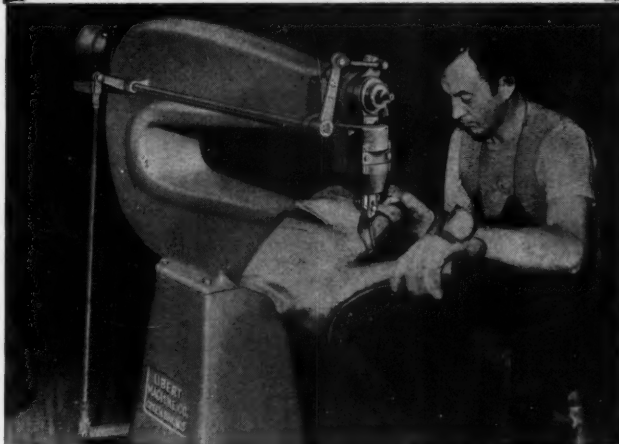
J. Harvey Manny, president of the Robinson Furnace Co., Chicago, advises that his company has purchased a two-story building at the corner of Kenton and Monroe Streets—Chicago's west side—with a floor area of 20,000 square feet.

Libert **Hi-Speed** SHEAR

Makes Short Work of Sheet Metal Shearing . . .

Here's the speed and versatility you need to boost production in Sheet Metal . . . Fast, accurate shearing—inside or outside cuts, flat or formed pieces, plain or irregular shapes—performed easily on a LIBERT, even with unskilled labor. Types and sizes for every need—with Foot Pedal Control that frees BOTH hands to guide your work.

Libert
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at North
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Inc.



Write for latest bulletin

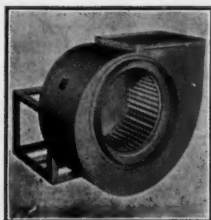
LIBERT MACHINE COMPANY

GREEN BAY, WISCONSIN

Quality Shears Since 1915

YOUR BLOWER Requirements

AVAILABLE AT
Schwitzer-Cummins Company



★ BLOWERS FOR EVERY PURPOSE

Double Inlet and Single Inlet

HY-DUTY Blowers, 9¾" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom

Motor Mounting • Dual Units also available.

★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4½" to 50".



★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.



A speed demon for

heating soldering irons, melting lead, solder, and compounds. The Unique Furnace produces an inferno of heat—a 12" flame over 2000° F. This intense heat is confined by the windproof burner shield and hood—flue action pulls and concentrates a column of white heat on the irons.

V Hood for
8" Melting Pot



Properly designed for safe, trouble-free service—in any weather. Has fine flame control. Broad base welded steel tank; powerful pump. Burns gasoline or kerosene—full gallon capacity. Many other fine features.

Speedy shipment to essential industries. Write today for details on Model V-50.

UNIQUE MFG. CO. INC.
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ON 25% LESS FUEL

Severe fuel rationing has put sales magic into these simple words, "A Field Control keeps you warmer on less fuel!" Always a best-seller because it cut fuel costs from 5% to 25%, the fuel saving Field Control now has a stronger appeal and greater market than ever before. The complete Field line covers all residential and commercial needs. And there's profit in every easy sale, installation taking as little as 30 minutes.

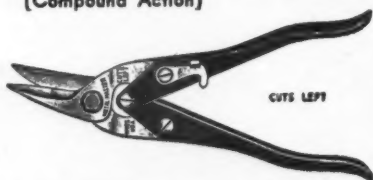


Illustrating the Field Type "M" Control, acknowledged the most accurate of draft controls. Write for information on this and other types in the complete Field line of domestic and commercial units.

FIELD CONTROL DIVISION
MENDOTA, ILLINOIS



WISS "METAL-MASTER" SNIPS (Compound Action)



"TWICE
THE WORK
WITH HALF
THE
EFFORT"

TWO MATCHED PATTERNS M1 (Cuts Left) M2 (Cuts Right) Cut circles, squares and any irregular patterns on Stainless, Dural and Monel Metals with the greatest of ease. Jaws of wear-resisting Manganese Molybdenum Steel. Handles hot-pressed from tough Chrome Vanadium Steel. Nickel steel bolts and nuts to Government specifications. All parts interchangeable. Detachable rubber handle grips at slight extra cost.

J. WISS & SONS CO.

ESTABLISHED 1848

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Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to 1/4" steel plate.

ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.

Special blades may be obtained for shearing stainless steel.

BREMIL MFG. CO., ERIE, PA.

NEW LECTRO-SHEARS

Cut Metal, Faster, Easier



Black and Decker's new, redesigned Portable Lectro-Shears cut all types of sheet metal quickly, accurately . . . on a radius as small as 1/4". Cutting operation always visible. New, improved operating handles provide better balance, easier control on curves and irregular lines. Cut up to rated capacity in steel, galvanized iron . . . 50% greater in non-ferrous metals. Ball-bearing equipped. Universal motor, designed for high speed, trouble-free service. Two sizes—15 and 16 gauge. No. 16 handle equipped with instant release trigger switch and locking pin for continuous operation. See your Black and Decker Distributor, or write direct to: The Black & Decker Mfg. Co., 782 Penna. Ave., Towson, Md.

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Payneheat
for the
homes of
America.

TODAY
Precision
parts for
the arms of
Democracy.

TOMORROW
Still finer
furnaces for the
gas industry's
post-war
expansion.

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Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

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VERNOIS FURNACES, made of Vernalloy, the toughest cast iron, have exceptional lasting qualities . . . but occasional repairs keep them at peak efficiency. When you repair Vernois Furnaces order your parts direct from Mt. Vernon to assure perfect fit and greatest efficiency.

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FURNACE
& MFG. CO.**

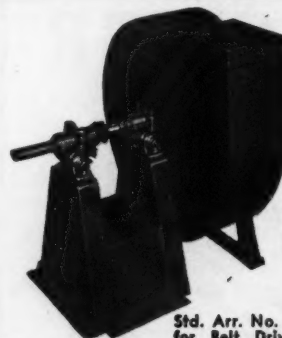
- MT. VERNON
- ILLINOIS

CHICAGO STEEL BRAKE



BEST BY FORTY-TWO YEARS TEST

DREIS & KRUMP MFG. CO.
7404 LOOMIS BLVD. CHICAGO



New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Std. Arr. No. 1
for Belt Drive

Write us about your problems. Send for Bulletin No. EX-41
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1817 South 66th Street Milwaukee, Wis.

"NON-METALLIC" REGISTERS

FOR
DEFENSE
PROJECTS

Approved by Government Authorities for air-conditioning installations in Hospitals, Industrial Plants, Fortifications, etc., under Army, Navy or Maritime rulings. Field-tested STANDFORATED Register and Grille designs of durable, tempered Masonite are fabricated in standard sizes or to your specifications. Write for complete information.



DESIGN NM-SLD—"Non-Metallic" Sliding Damper Foundation Vent.



FOR PRODUCTION SPEED-UP—Specify Precision Processed STANDFORATED Perforations. Industrial Screens, Filters, Guards, etc., made to specifications for vital industries. Handy catalog sent on request.

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WMC Report on Labor Situation

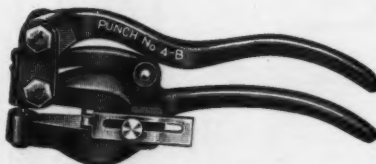
(Continued from Page 36)

Colorado: Denver.
Connecticut: Norwalk.
Florida: Jacksonville.
Georgia: Atlanta.
Illinois: Aurora, Chicago, Rockford.
Indiana: Bloomington, Fort Wayne, Indianapolis, Richmond, South Bend.
Iowa: Cedar Rapids, Des Moines.
Louisiana: New Orleans.
Maryland: Cumberland.
Massachusetts: Worcester.
Minnesota: Duluth, Twin Cities.
Mississippi: Aberdeen.
Missouri: Kansas City, St. Louis.
Nebraska: Omaha.
New Jersey: Atlantic City.
New York: Auburn, Batavia, Binghamton, Dunkirk, Jamestown, Kingston, Newburgh, Poughkeepsie, Sidney, Syracuse, Watertown.
North Carolina: Charlotte.
Ohio: Cincinnati, East Liverpool, Fostoria, Mansfield, Toledo, Youngstown.
Oklahoma: Oklahoma City, Tulsa.
Pennsylvania: Johnstown.
Rhode Island: Providence.
South Dakota: Sioux Falls.
Tennessee: Memphis.
Texas: Amarillo, Corpus Christi, Galveston, Houston, San Antonio, Waco.
Wisconsin: Eau Claire, Madison, Racine.

Group IV (Labor Surplus)

Alabama: Birmingham, Montgomery.
Arkansas: Fort Smith, Little Rock.
Connecticut: Middletown, Torrington.
Florida: Miami, St. Petersburg.
Georgia: Augusta, Columbus, Rome.
Illinois: Bloomington, Danville, Galesburg, Herrin, Peoria, Quincy.
Indiana: Muncie.
Iowa: Sioux City.
Kentucky: Lexington, Owensboro, Paducah.
Louisiana: Alexandria, Baton Rouge, Monroe, Shreveport.
Maine: Bangor, Lewiston.
Massachusetts: Boston, Fall River, Fitchburg, Haverhill, Lowell, Salem, Taunton.
Michigan: Grand Rapids, Kalamazoo.
Mississippi: Jackson, Vicksburg.
Missouri: Cape Girardeau, Joplin, St. Joseph, Springfield.
Montana: Billings.
Nebraska: Lincoln.
New Hampshire: Concord, Manchester, Nashua.
New Mexico: Albuquerque.
New York: Central Long Island, New York, Yonkers.
North Carolina: Asheville, Durham, Greensboro-Winston-Salem, Rocky Mount.
Ohio: Coshocton, Portsmouth, Steubenville, Zanesville.
Pennsylvania: Altoona, Scranton.
South Carolina: Columbia, Greenville.
Tennessee: Chattanooga, Knoxville, Nashville.
Texas: Abilene, El Paso, Laredo, Lubbock, San Angelo, Wichita Falls.
Vermont: Burlington.
Virginia: Richmond, Roanoke, Danville, Lynchburg.
West Virginia: Charleston, Huntington, Parkersburg, Wheeling.
Wisconsin: Oshkosh, La Crosse, Sheboygan.

WHITNEY LEVER PUNCHES



**NUMBER
FOUR "B"
PUNCH**

This punch for sheet metal work has a capacity of $\frac{1}{4}$ " through 16 gauge. Weight 3 lb. Length $8\frac{1}{2}$ ". Depth of throat 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key. A time-saver for your up-to-date shop.



**NUMBER TWO
PUNCH**

And here's another handy tool for the modern shop—the No. 2 Punch. Length 23". Capacity $5/16$ " through $1/4$ " iron, weight 12 lbs., depth of throat $1-11/16$ ". Punches and dies $3/32$ " to $1/2$ " by $1/64$ ".



WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.



CAN'T GET 'EM UP
in the morning!

It's those luxuriously comfortable
beds at all
DEWITT OPERATED HOTELS

In Cleveland *In Columbus*
HOTEL HOLLENDEN **NEIL HOUSE**
In Lancaster, O. *In Corning, N. Y.*
THE LANCASTER **THE BARON STEUBEN**

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SPOT WELD WITH AN ACME "Hot Spot" WELDER

Proven utility for over 26 years in thousands of sheet metal fabricating plants.

Write for Literature and Prices.
Complete Range of Sizes
Lifetime Guarantee!

ACME ELECTRIC WELDER CO.
2618B Fruitland Road Los Angeles, Calif.



REPAIR PARTS FOR ALL MAKES STILL AVAILABLE



With priorities restricting sales of new equipment, repair business is more essential than ever. PEERLESS dealers can still depend upon prompt deliveries of repair parts for ALL MAKES AND AGES of furnaces. Get the repair business now and you'll be all set to get the new jobs after the war. PEERLESS builds warm air heating equipment in all sizes, including heavy duty units for the largest buildings. Write for dealer proposition and repair parts catalog.

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Elgo Ventilating Specialties

Why You'll Like This Automatic Shutter

An automatic shutter that not only opens more quickly but also closes more tightly. Completely weather-stripped around the inner edge of the frame to make a snug, tight fit. Noted also for absence of blade flutter. And it is adjustable for different air velocities. Sizes from 10" to 60" square—also rectangular.

Write for Catalog and Prices



"ELGO" TYPE
AUTOMATIC SHUTTER
Rear View (Closed)

Free
CATALOG

ELGO SHUTTER & MANUFACTURING CO.
6966 W. Jefferson Detroit, Mich.

Repair parts FOR ALL HEATING UNITS



A. G. BRAUER SUPPLY CO.
Distributors of All Heating and
Air Conditioning Equipment

2100 Washington Ave. St. Louis, Mo.

Incendiary Bomb Remover

(Continued from Page 56)

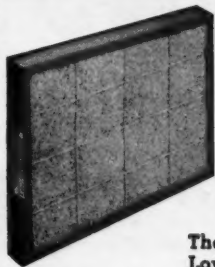
size as is —A—, and the rear corners similarly sheared off, or the blank may be 15x30 inches, whichever preferred. The blank is provided with double-up edges on its sides, the flanges about 1/2 inch wide, so that the part —F—, formed on 9 inch radius, will slide easily back and forth in the channels of B-C, of part —A—. Part —F— is closed in the front by the End —G—, as shown, with the bottom edge of —G— doubled and bent inward on about 15 degrees, to facilitate picking up the bomb.

The rod —H— is fastened to the top of —F— on its inside, and protrudes through large enough holes in the perforated sleeve —E—, the rod remains straight for about 12 inches past the perforated sleeve, and then it bends upward on a slight radius, to reach up towards the wood handle. The end of the rod might be provided with a wood handle, inserted *after* the rod had been inserted through the part —E—. Also, the rod should have a *stop* fastened to it at the end of the 12 inch distance, the stop preventing the part —F— sliding out entirely from within the part —A—. The best way to accomplish this would be to make the rod of two pieces, connecting them at the 12 inch distance by a threaded-on coupling.

The wood handle to —E— must be a long one, 6 or more feet, so the device can be wheeled over the bomb and the operator remain away from the hot sparks. There can be a sliding hold for the rod —H— on the wood handle, which hold may be fashioned as the constructor sees fit.

The operation of the device picking up the fire-spitting bomb is as follows:

- 1—The person at hand wheels the device near the bomb. Then by pushing on the rod —H—, the part —F— slides forward about 12 inches, so the hood elevated from the floor closes over the bomb;
- 2—The operator tilts the device over the bomb, pulls at the rod, the part —F— by its end —G— sweeping the bomb inside of part —A—, the part —F— with its end —G— inclosing the bomb within the device;
- 3—The operator wheels the device to the outside of the building, holding tight at the rod —H—, so that the part —F— can not slide out and the bomb fall out while being carted;
- 4—If wheeling must be done over steps, the rod must be held tightly in position; the operator can lift the device by the handle and carry it over the steps instead of wheeling it.
- 5—Outside of the building there can be a pile of sand into which to bury the bomb.



AXIOM AIR FILTER

The result of fifteen years experience
Lower in cost — Higher in quality
Huge dust capacity—low resistance
Prompt delivery assured
Order now

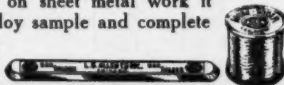
BLOCKSOM & COMPANY, MICHIGAN CITY, INDIANA



SILOY "NON-PRIORITY" SODER

Yes Sir! Siloy "Non-Priority" Soder is going over better than ever. From every corner of the country comes the demand . . . every day brings evidence that Siloy is helping solve soder problems for non-priority work. Used with Allen G. I. Flux on sheet metal work it has no equal. Why not send for a Siloy sample and complete information right now! You'll be mighty glad that you did so.

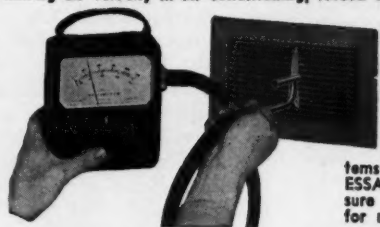
Available in Bar or Wire Form



L. B. ALLEN CO., Inc.
6702 BRYN MAWR AVE., — CHICAGO

"ALNOR" VELOMETER DIRECT READING AIR VELOCITY METER

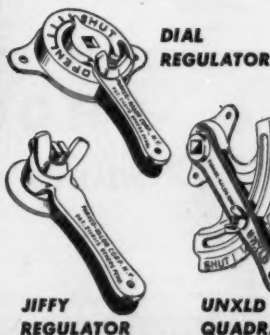
"Alnor" Velometer fills the need for a simple, accurate means of determining air velocity in air conditioning, forced air exhaust ducts, etc. Peak efficiency operation is now more important than ever before . . . and Velometer with its many simple attachments assures correct readings, under the most adverse conditions, in feet per minute, right on the scale! These readings enable you to gauge the system efficiency and MAKE NECESSARY ADJUSTMENTS to assure greatest efficiency. Write for new catalog now!



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412 N. La Salle St., Chicago, Ill.

A Type And Size For Every Need

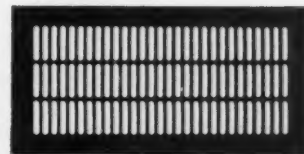
For efficiently controlling light and medium dampers in heating, ventilating and air conditioning systems, specify Parker-Kalon Damper Controls. The line includes all types and sizes, at a range of prices to fit the needs of any job. Parker-Kalon Corp., 190-192 Varick Street, New York.



PARKER-KALON damper controls

USE AUER SERVICE

Auer registers and grilles can only be furnished subject to present Federal restrictions. We are also equipped for stamping and fabricating other products of sheet metal. Our facilities are for perforation, forming, assembling, welding, and enameling in gauges 10 to 24. Inquiries invited.



Auer Register Book sent on request

THE AUER REGISTER COMPANY, Cleveland, O.

AUER REGISTERS & GRILLES · For Air Conditioning and Gravity

REPAIR PARTS

for any and all makes of

STOVES—FURNACES—BOILERS

Same Day Shipments

Also **MODERNAIRE** FURNACES

Fittings, Registers, Supplies

DES MOINES STOVE REPAIR CO.

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Since 1869

DES MOINES, IOWA

Write for
Catalog and
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SPEED UP ORDERS with a BEVERLY SHEAR

Throatless shears that cut any shape . . . straight, round or irregular. **FASTER**—no distortion! Precision—accuracy! Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

BEVERLY SHEAR CO.
3009 W. 110th Pl., Dept. 1
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HIGH EFFICIENCY...

LOW POWER COSTS

LARGE, STREAMLINED INLET MEANS MINIMUM
LOSSES DUE TO ENTRANCE FRICTION OR EDDIES

WITH THIS

Sturtevant MILL EXHAUSTER

B. F. STURTEVANT COMPANY
Hyde Park, Boston, Mass.
Branches in Principal Cities

"Designed and Built by the Pioneer"

★ War Time Trade News ★

ROCK ISLAND REGISTERS and INTAKES

Two trade marks to remember when you want the height of efficiency, beauty and low cost combined in registers and intakes.

AIR-VANE



Dealers Net Estimating book, a time and money saver, sent free upon request.

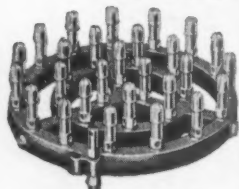


ROCK ISLAND REGISTER CO.
ROCK ISLAND ILLINOIS



BARBER BURNERS

For ALL Gas Appliances



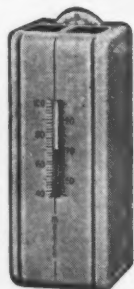
Our facilities are now mainly employed on war work. For those limited purposes for which our regular line of products is permitted, we shall continue to supply them. Later, when normal conditions are restored, Barber will furnish its customary service to the trade on high quality Burners and Regulators.

Latest Catalog on request.

THE BARBER GAS BURNER CO.
3704 Superior Ave., Cleveland, Ohio

ACCURATE

DEPENDABLE



MASTER HEAT REGULATOR

TYPE A-23 positive snap action regulator operates on a differential of only 1/2 degree.

WHITE MFG. CO., 2368 University Ave., St. Paul, Minn.

GILCO

Automatic

FURNACES and WATER HEATERS



J. L. GILLEN CO.

DOWAGIAC • • MICH.

The Armstrong Cork Company, Lancaster, Pa., announces a total of 1955 employees in the armed forces as of January 1, 1943.

The Munitions Division was formed shortly after the outbreak of hostilities in Europe in 1939. Since that time the company has engaged in the manufacture of the following products: High explosive shells in many calibres, chemical shells, armor-piercing shot, drill cartridges, proof shot, brass and steel cartridge cases, bombs, concealment materials, bomb racks of many types, airplane sub-assemblies, formed parts, plastic turrets and many others. A large percentage of Armstrong's present operations are concentrated on such work.

As early as May, 1942, 98 per cent of Armstrong's employees were participating in the purchase of bonds—for which the Minute Man Pennant was awarded.

The Armstrong Cork Company was awarded the Army-Navy "E" November 30, 1942, for high excellence in war production.

Bomb racks, designed and manufactured by Armstrong, were used by the bombers, led by Doolittle, which raided and bombed Tokio and other Japanese cities.

Schwitzer - Cummins Company, Indianapolis, has been working 100 per cent war work since 1940, according to Louis Schwitzer, Jr., Vice President.

Ernest Kluegel of Ernest Kluegel & Co., St. Paul, Minnesota, advises that Ernest Kluegel, Jr., a member of their firm, is now at Officers' Candidate School, Camp Davis, N. C., in the Anti-Aircraft School, and will receive his commission as a 2nd lieutenant in April.

Capt. Joseph E. Kluegel, son of Ernest Kluegel, Sr., is a member of the Signal Corps. His group saw action in the African invasion. After leaving the United States he went to Ireland and from there was sent to Africa. He reports that he is getting along fine and is enjoying the country.

The Westinghouse Electric Appliance Division at Mansfield, Ohio, is making binoculars, armor-piercing shot, such aircraft parts as control surfaces, tail cones, instruments and radio equipment, tank telescopes and insecticide bombs. More than 98 per cent of the business of this division consists of war orders.

The following employees, in the capacities listed, are now in Government service:

Robert H. Springer, time analyst.
George Edick, Jr., junior engineer.
F. E. Ross, advertising section manager.
James Zimmerman, engineer.
Stanley G. Fisher, sales manager.
Charles Duy, Jr., advertising section manager.
Thomas Kalbfus, sales training supervisor.
William Coffey, product demonstrator.
Robert McDevitt, publicity representative.
Harry Pollock, assistant production.

The Westinghouse "Bond-A-Week" Club now has more than 100 members buying war bonds every seven days. These war workers are investing more than \$2,000 weekly—enough to buy approximately 27,500 Army rifle cartridges.

Henry Aronson, who has been handling sales and engineering among the dealers of the Premier Furnace Co., Dowagiac, Michigan, is now a field engineer in the Chicago Office of Petroleum Administrator for War, specializing in conversion of industrial boilers to coal burning.

The men and women of the Minneapolis-Honeywell Regulator Company, Minneapolis, have won the coveted Army-Navy Production Award for the second time in six months "for meritorious services on the production front." A new "E" flag with a white star added to indicate the second award has been forwarded by the War and Navy Departments.

Arthur Rummel of the Lee Furnace Co., South Bend, Indiana, is now heating supervisor at Selfridge Field, Michigan. Mrs. Rummel is continuing with the business with the aid of former assistants.



CHOOSE:

BONDS or BONDAGE

Buy U. S. War Bonds



With manufacturing facilities converted 100% to War Production, our research department is devoted to designing improved units to be added after V day to the complete CONCO line.

CONCO

CORPORATION
Div. of H. D. Conkey & Co.
MENDOTA, ILLINOIS

★ War Time Trade News ★

The Marley Company, Kansas City, Kansas, displays an "Output Chart" in the lobby of the plant. Month by month, it keeps Marley workers informed of the results of their efforts, devoted 100 per cent to production for American and Allied war plants, and for Army and Navy bases.

Before Pearl Harbor, Marley's output was 85 per cent for defense, and since then has been exclusively war production.

Production at the start of 1943 is triple the figure for 1942, which was double that for 1941. That the patriotism of the individual workers is the major factor behind this increased output is proved by the fact that it has been accomplished with only slight increase in equipment and personnel.

William Jahn, formerly Priorities Expert and Branch Co-ordinator for Milcor Steel Company, is now a Captain in the Army in Washington. His job is Inventory Planning and Control at the Quartermaster Depots under the Quartermaster-General and he makes frequent trips to the different Quartermaster Depots.

The Mercoid Corporation, 4201 Belmont Ave., Chicago, gets out a little publication—6 x 9 inches—for their men in the service.

The November-December issue carries greetings to those in service from those at home and has a group picture of the home folks; Tidbits about Our Boys; an announcement of the Christmas Party; sports; and the latest whereabouts of men in service. The January issue, like the November-December issue, carried pictures of those in service.

Densewood Corporation, Elkhorn, Wisconsin, is working approximately 72 per cent on war orders. They are currently working on mallet orders from Picatinny Arsenal, Dover, N. J., and several of the leading aircraft builders, according to J. R. Curtis.

McCord Radiator & Mfg. Co., Detroit, E. O. Bodkin reports 90 per cent of their present business consists of war orders. Ninety-four per cent of employees are buying 10 per cent or more war bonds.

The following are in service:

Tunis Ross, USNR, Lieutenant—Heat Transfer Engineer, Air Conditioning—Tropics.
James Hayward is a private in the U. S. Army.

Don C. Patten of J. V. Patten Company, Sycamore, Illinois, advises that Irene Lalley, secretary to J. V. Patten, has joined the WAVES and will be called for active duty very soon.

War contracts includes fabrication of .30 caliber armor piercing machine gun bullet cores—a screw machine operation—with production about 40,000 cores per day; manufacture of 5/16-in. Boots Aircraft engine lock nuts for Buick Engine Division, General Motors Corp.—screw machines, tapping machines, press operations, hardening and plating—with production about 25,000,000 pieces, starting April, 1943; also machine shop and war plant maintenance work.

Present business consists of about 80 per cent war orders.

A local war plant needed additional manufacturing space, so the Patten company has remodeled about 8,000 sq. ft. of their warehouse space, installed plumbing and heating equipment, etc., for their use, and leased the space for the duration. This leaves approximately 18,000 sq. ft. for their own operations.

C. R. Evans, Vice President of The George Evans Corporation, Moline, Illinois, advises that 100 per cent of their present business consists of war orders. All war orders are assemblies, fabricated from sheet metal or light plate. All employees are purchasing war bonds through the payroll allotment plan.

Fifty-one of their former employees are in the service of Uncle Sam, some of whom have seen action in Africa.



Leader
KOOLSTACK FURNACES
FOR STOKERS
OIL or HANDFIRED
50,000 to 200,000 BTU's
Patented D a m p e r
Uses All the Heat
in the Added Heating Surface
THAT
IS SOMETHING
TO SELL
LEADER IRON WORKS, Inc.
Decatur Illinois

ECON-O-COL
the "Stronghearted"
S T O K E R



ECON-O-COL STOKER DIVISION
COTTA TRANSMISSION CORP.
ROCKFORD ILLINOIS

THE SHIELD OF HONESTY

Syncromatic
T. M. REG.

COAL AND OIL

GRAVITY AND FORCED AIR

STEEL FURNACES

3373 No. HOLTON ST., MILWAUKEE, WIS.

Famous Patented *Monogram* Vaporizing Burner
Provides Highest Known Operating Efficiency with Oil

Full Forced Winter Air Conditioners

◆

Booster Gravity Units




Utility Room Units

◆

Automatic Water Heaters

The QUINCY STOVE MFG. COMPANY, Quincy, Illinois



THE MERCOID CATALOG IS A GOOD REFERENCE BOOK WHEN IN NEED OF AUTOMATIC CONTROLS. A COPY WILL BE SENT UPON REQUEST.

THE MERCOID CORPORATION
4209 Belmont Avenue
CHICAGO, ILL.

For Balanced Atmosphere.



AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa



DENSEWOOD

Replaces ALL Soft-Faced MALLETS!

You save money and time on sheet metal work with DENSEWOOD MALLETS! New "Condensed" wood is THREE TIMES stronger, tough as metal—for harder hitting, faster work, LONGER WEAR. Resilient, non-splitting, cannot mar polished surfaces. All types and sizes, with precision-balanced "Lock-Wedge" handles that never loosen.

Write for details and prices TODAY on DENSEWOOD MALLETS

DENSEWOOD CORPORATION
ELKHORN, WISCONSIN

BB

HOOKS & HANGERS

THRU
LEADING
JOBBER
EVERYWHERE

No. 9

BERGER BROTHERS CO.

Main Office & Factory
229-237 Arch St., Philadelphia, Pa.

MONCRIEF FURNACES

For

REPLACEMENTS and DEFENSE HOUSING

★

Genuine Moncrief Repair Parts give
the most satisfaction in every way

★

THE HENRY FURNACE & FOUNDRY COMPANY
3471 East 49th Street • Cleveland, Ohio

Forms For MPR 251

(Continued from Page 24)

Item 3 (4) is self-explanatory. So is Item 3 (5).
Item 3 (6) is your estimate of the total cost to the customer.

Certificate

With the Fixed Fee, or Cost Plus, a Certificate must again be given to the customer and a copy to OPA, the same as in Lump Sum, on completion of the work.

CERTIFICATES AS REQUIRED UNDER SECTION 1397.61 of MPR NO. 251

Date _____

To: _____
(Name of Purchaser)

I (we), hereby certify that our contract number _____, dated _____, was in

complete compliance with Maximum Price Regulation No. 251, a copy of which may be seen at our office.

(A) If Lump Sum Contract:

Our ceiling price on this contract was \$ _____
Our contract price on this contract was \$ _____

(B) If "Cost Plus" Percentage:

Our ceiling margin percentage markup on cost was \$ _____
Our contract margin percentage markup on cost was \$ _____

(C) If "Fixed Fee" basis:

Our ceiling "Fixed Fee" on this contract was \$ _____
Our contract "Fixed Fee" on this contract was \$ _____

(Contractor)

By _____
Title _____

A copy of this certificate has been mailed to the Office of Price Administration located at Street _____ City _____

When job is finished you must give your customer this certificate showing the permissible ceiling price and final cost. This one form can be used for Lump Sum or Fixed Fee or Cost Plus Jobs.

Finally—remember all the above is for jobs selling for more than \$500. For any job under \$500 you need file no report, but you should, "To the price which would have been charged for said sale in March, 1942 (based upon his then prevailing rates for labor and materials and his then prevailing margin) the seller shall add increases in labor costs thereon up to July 1, 1942. The resulting figure shall be the maximum price for such sale."

AMERICAN ARTISAN Service Section



THE HINMAN BENDERS

Angle & U, Eye and Pipe

Write for catalog.

manufactured by

L. R. EVANS MACHINE COMPANY
SANDWICH, ILLINOIS

Better for Every Spraying Purpose

MARLEY SPRAY NOZZLES



"Tops" for Air Washing, Humidifying, Brine Spray Lofts, etc. Marley nozzles lead all in sales and in profits to you.

* Finer, more uniform spray.
* Effective operation at Low Pressures. * No internal parts to clog or wear.

MARLEY CO., INC. Write for Literature Now
Kansas City, Kansas

Classified

WANTED

WANTED—Shears, rolls and brake for handling 10 gauge and lighter steel. Address: Frank W. Winter, 805 W. 4th St., Davenport, Iowa.

WANTED—10"—10 or 12 gauge power shear. Address: Key No. 566, American Artisan, 6 No. Michigan Ave., Chicago, Ill.

SITUATIONS OPEN

WANTED—Elderly man with plumbing and sheet metal experience. Must be able to do small repair work in these lines for retail plumbing, heating and hardware concern near Milwaukee, Wis. Shop work only. Steady job. State experience and salary expected. Write Key No. 565, American Artisan, 6 No. Michigan Ave., Chicago, Ill.

Alphil Spot Welders

More Production—
Lower Cost

used in leading Aircraft Industries and many other Government plants.

• Welders built for both foot and air operation. Rocker Arm, Press Type, Lower Adjustable Arms, Straight Up and Down, also Swivel Type.

Problems? Consult Us. For literature and prices write to Dep't A. M.

Alphil Spot Welding Co.
431 W. Broadway
New York, N. Y.



CRACK DOWN ON Spatter COSTS

USE SPATTER-NOX

Reduces weld spatter 50-75%; cuts cleaning time 50%; increases welding speed 30-50%. Inhibits rust and is a good foundation for paint. Simply brush or spray on. Covers 450-700 square feet per gallon.

AND SPATTER-OFF

A companion water-soluble product. Used where welds are to be pickled for galvanizing, sherardizing or plating. Spatter-Off is non-fuming. Covers 500 square feet per gallon.

Write for Latest Descriptive Bulletin #
UNIVERSAL POWER CORPORATION
4298 Euclid Avenue Cleveland, Ohio

YAGER'S Soldering Salts—Paste

Two standard fluxes for all soft soldering. Safe, quick, certain. Buy them at your jobbers or write us if he cannot supply you.

1/2 lb., 1 lb., 2 lb. cans; 2 oz., 6 oz., 12 oz.
ALEX. R. BENSON CO., INC., HUDSON, N. Y.

BLOWERS — FANS — EXHAUSTERS

THOROUGHLY REBUILT, for perfect performance. All types; all standard makes. All sizes including the big ones. Hundreds in stock, meeting all requirements. Attractive prices. Fully guaranteed. Expert engineering counsel. **GENERAL BLOWER CO., Engineers, 403 North Peoria Street, Chicago, Illinois.**

PROMPT SHIPMENT FROM STOCK

APRON BRAKES
POWER: 10'10 ga. 8'10 ga. 4'1/4"; 6'12 ga.;
HAND: 8'16, 8'18, 6'18, 6'16, 6'14, 4'16;
BOX & PAN: 7'14; 4'14; 5'14;

PRESS BRAKES
D&K: 10'3/16"; 6'14 ga.; 10' POORMAN;
OHL: 10'14 ga.; 4'16 ga.; 5'14, 66" 14 ga.;

FLOOR LATHES
30" PIT LATHES: 156" face plate;
24"x10" BRADFORD; 24"x10" RYERSON;
20"x8", 18"x8" & 16"x8" MONARCH; 16"x8"
& 15"x5" FLATHER; 14"x8" L&S;

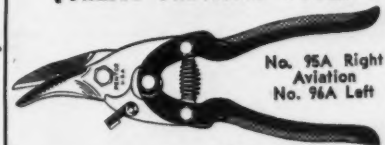
MISCELLANEOUS ITEMS
No. 2-48 CINCINNATI 2 SP. VERT.
BROACH; With motors; New 1937;
No. 2 1/2 B KEARNEY TRECKER VERTICAL
MILL; No. 2-B&S VERT. MILL;
Nos. 2-B & 3 MANVILLE THREAD
ROLLERS; 1/4" capacity;
1/2" & 3/4" SHUSTER WIRE STRAIGHT-
ENERS; 24 & 30 Ft. cutoffs.

INTERSTATE MACHINERY CO., INC. — YARDS 5800
1433 W. PERSHING RD., CHICAGO, ILL.

NEW Improved PENTCO

Compound Action AVIATION — SHEET
METAL and ELECTRICIAN SNIPS

QUALITY PRECISION TOOLS



No. 95A Right
Aviation
No. 96A Left

Maximum power, minimum effort.

Combination, Right and Left, No. 185-190-195.

Blades made from alloy steel. Hardened and tempered for rough use. Will cut with ease all grades of steel. Side locking feature that will not interfere with cutting blades.

Case hardened bolts.

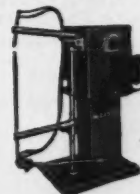
IMMEDIATE DELIVERY

Write for Circular

PENN TOOL CO.

2415 N. Howard St., Philadelphia, Pa.

WELDING HEADQUARTERS



Electric welding equipment of every description to weld from a watch case to a door. Special or standard SPOT WELDERS from 1/4 to 500 K.V.A. A.C. Arc Welders from 100 to 600 Amperes. We invite contract Spot Welding in large or small quantities.

EISLER ENGINEERING CO.

CHAS. EISLER

701 S. 18th St. (Near Ave. Ave.) Newark, N. J.



Save Money, Time and Muscle

Drill Concrete with the "Do-All" Combination Electric Hammer and Drill. Set expansion bolts 10 to 30 times faster than with hand tools. Drills concrete, brick, stone, metal, wood. Easy to maintain. Weighs 15 lbs. Drills to 1 1/2" in concrete. 2400 blows per min. Bulletin 400. Phone Austin 8866.

WODACK ELECTRIC TOOL CORPORATION
4644 W. Huron St., Chicago, Ill.

SERVICE SECTION: Rates for display space similar to above in Service Section are \$5.00 per inch per insertion. One-inch minimum space accepted. **Classified Section:** Rates for classified advertising are 5 cents for each word including heading and address. Count seven words for keyed address. Minimum \$1.00 for each insertion. Cash must accompany order.

Index to ADVERTISERS

Accurate Mfg. Works..... *	Gehl Bros. Mfg. Co..... *	Patten Co., J. V..... *
Acme Electric Welder Co..... 84	General Blower Co..... 89	Payne Furnace & Supply Co..... 82
Adams Co., The..... 70	General Controls..... 80	Peck, Stow & Wilcox Co., The..... 70
Aerofin Corp..... *	General Electric Co..... 15	Peerless Electric Co., The..... *
Air Control Products, Inc..... *	Gerett Corp., M. A..... *	Peerless Foundry Co..... 84
Air-Maze Corp..... *	Gillen Co., J. L..... 86	Penn Electric Switch Co..... 6
Airtherm Mfg. Co..... 72	Grant Wilson, Inc..... 14	Penn Tool Co..... 89
Allen Co., Inc., L. B..... 85		Perfex Corp..... *
Allen Corp..... *		
Alphil Spot Welding Co..... 89	Harrington & King Perforating Co..... 77	Quincy Stove Mfg. Co..... 87
American Air Filter Co., Inc..... 18	Hart & Cooley Mfg. Co..... 76 and 77	
American Blower Corp..... *	Heil Co..... *	
American Brass Co..... 10	Henry Furnace & Foundry Co., The... 88	Randall Graphite Products Corp.....
American Coolair Corp..... *	Herco Oil Burner Corp..... *Inside Front Cover
American Radiator & Standard	Heremetal Co., The..... *	Register & Grille Mfg. Co..... *
Sanitary Corp..... *	Hussey & Co., C. G..... 73	Republic Steel Corp..... *
American Rolling Mill Co., The..... 69		Research Products Corp.....
Armstrong Company, The..... *	Ilg Electric Ventilating Co..... 17Outside Back Cover
Auer Register Co..... 85	Illinois Testing Laboratories, Inc..... 85	Rock Island Register Co..... 86
Automatic Humidifier Co..... 88	Independent Register Co., The..... *	Round Oak Co..... *
Automatic Products Co..... 71	International Heater Co..... *	Rybolt Heater Co..... 40
	Interstate Machinery Co..... 89	Ryerson & Son, Inc., Joseph T..... 3
Barber Gas Burner Co., The..... 86	Jackson & Church Co..... 75	Sall Mountain Co..... 5
Bard Mfg. Co..... *	Jannette Mfg. Co..... 78	Schwitzer-Cummins Co..... 81
Bayley Blower Co..... 82	Johnson Co., S. T..... *	Scovill Mfg. Co..... *
Benson Co., Inc., Alex R..... 89		Skilsaw, Inc..... 19
Berger Bros. Co..... 88	Lafayette Hotel..... *	Southwest Hotels..... *
Bethlehem Steel Co..... 13	Lamneck Products, Inc..... *	Standard Stamping & Perforating Co. 82
Beverly Shear Co..... 85	Leader Iron Works, Inc..... 87	Stanley Electric Tool Div., The
Black & Decker Mfg. Co..... 82	Libert Machine Co..... 81	Stanley Works..... *
Blocksom & Co..... 85	Lincoln Electric Co..... 74	Sturtevant Co., B. F..... 85
Brauer Supply Co., A. G..... 84	Lockformer Co..... 68	Superior Sheet Steel Co..... 7
Bremil Mfg. Co..... 82		Swartwout Co..... 79
Breuer Electric Mfg. Co..... *	Marley Co., The..... 89	Syncromatic Air Conditioning Corp.... 87
Burt Mfg. Co..... *	Marshalltown Mfg. Co..... 79	
	May-Fiebeger Co..... 78	Torrington Mfg. Co..... *
Carnegie-Illinois Steel Corp..... 52	May Oil Burner Co..... *	Tuttle & Bailey, Inc..... *
Century Electric Co..... 9	Mercoid Corp., The..... 37	
Cheney Metal Products Co..... 71	Meyer & Bro. Co., F..... *	U. S. Air Conditioning Corp..... *
Clarage Fan Co..... 74	Meyer Furnace Co..... *	Unique Manufacturing Co., Inc..... 81
Conco Corp..... 86	Milcor Steel Co..... *	United States Gypsum Co..... *
Condensation Engineering Corp..... 75	Minneapolis-Honeywell Regulator Co.	U. S. Register Co..... 80
Cotta Transmission Corp..... 87Inside Back Cover	U. S. Steel Corp..... 52
Crescent Tool Co..... 16	Mitchell & Smith, Inc..... *	U. S. Steel Supply Co..... 52
	Monmouth Products Co..... *	Universal Power Corp..... 89
Dewitt Hotels..... 83	Morency-Van Buren Div., Scovil	
Densewood Corporation..... 88	Mfg. Co..... *	Wagner Electric Corp..... 76
Des Moines Stove Repair Co..... 85	Morrison Products, Inc..... 8	Waterloo Register Co..... *
Detroit Lubricator Co..... 67	Mt. Vernon Furnace & Mfg. Co..... 82	Waterman-Waterbury Co., The..... *
Dreis & Krump Mfg. Co..... 82	Mueller Furnace Co., L. J..... *	Westinghouse Electric & Mfg. Co..... *
		White Mfg. Co..... 86
Eialer Engineering Co..... 89	Niagara Machine & Tool Works..... 72	White-Rodgers Electric Co..... *
Elgo-Shutter & Mfg. Co..... 84	Norge Heating & Conditioning Div.,	Wise Furnace Co..... *
Evans Machine Company, L. R..... 89	Borg-Warner Corp..... *	Whitney Mfg. Co., W. A..... 83
	Northwestern Stove Repair Co..... *	Whitney Metal Tool Co..... 78
Farrelloy Company, Inc..... 79		Williams Oil-O-Matic Heating Corp... *
Field Control Division..... 81	Olsen Mfg. Co., C. A..... 20	Williamson Heater Co..... *
Fireline Stove & Furnace Lining Co... *	Osborn Co., J. M. & L. A..... 11	Wilson, Inc., Grant..... 14
Fitzgibbons Boiler Co., Inc..... 12	Owens-Corning Fiberglas Co..... 62	Wiss & Sons Co., J..... 82
Forest City Foundries Co..... *		Wodack Electric Tool Corp..... 89
Frederick Iron & Steel Co..... *	Pacific Airmax Corp..... *	Wood Industries, Inc., Gar..... *
	Parker-Kalon Corp..... 85	
		Zink Co., John..... *

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in other issues is marked with an asterisk.



mH Electrons ARE COMING!

Every day M-H Electrons are coming closer—closer to you. Today they are performing miracles on our fighting fronts, in warcraft and on protective devices. Tomorrow, when Peace comes, M-H Electronics will be applied to temperature and industrial control, to bring to you and your

clients and customers new miracles of comfort, economy and convenience. M-H Electronics, like M-H Automatic Controls, will make possible better Automatic Heating. Minneapolis-Honeywell Regulator Co., 2726 Fourth Avenue S., Minneapolis, Minnesota. Branches in principal cities.

★ Listen: "JOHN FREEDOM"
Blue Network Coast to Coast every
Wednesday, 9:00 to 9:30 P. M. Eastern
War Time; or see your local newspaper.
"The Most Dramatic Show on the Air"

MINNEAPOLIS-HONEYWELL
CONTROL *Systems*



THE HOT DAYS OF SUMMER

*will soon be here . . . time
now to get air conditioning
equipment in working order*

BE SURE TO CHANGE
AIR FILTERS—*Install*

RESEARCH AIR FILTERS

For Clean, Free Flowing Air



The Air Filter
that's made for Air
Conditioning Equipment Use

● REMOVES DUST, LINT ● REMOVES POLLEN

91% efficient by ASHVE tests;
provide 25 square feet of efficient
dust catching surface for every
square foot of filter area.

In fully half of the United States,
hay fever and other disorders oc-
casioned by pollens, are of serious
concern. Filters are absolutely
necessary for clean air, and Re-
search Filters are best.

● LESS RESTRICTION ● HIGH CAPACITY

Research Filters filter all the way
through, with 30,000 tiny baffles
per square foot to catch the dirt.
Every filter made of 20 layers of
expanded adhesive coated, fire-
proofed fiber.

The great dirt holding capacity of
Research Filters means longer life
and lower filtering costs—espe-
cially because of the RiP-Clean
feature.

Research Air Filters are easily replaced in Filter
banks—in both flat and V types, as well as in unit
air conditioning equipment.

Write for free bulletins, data sheets and price lists
on Research Air Filters.

—the filter that is used by leading manufacturers as
standard equipment in forced air and air conditioning
systems. Illustrated is the "No. 200 Series". This
edge-sealed filter pad between wire grids, is over-
sized, preventing unfiltered leakage of air at edges.



When the filter pad be-
comes clogged with lint
and dirt, it is removed
from the grids, the two
top layers rolled off and
its original high efficiency
re-established (this may
be repeated 5 times).

RESEARCH PRODUCTS CORPORATION
Dept. A4 MADISON, WISCONSIN